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PRINCIPLES OF INTRAPERITONEAL DRAINAGE*

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DRAINAGE as a term is often the cause of a misconception of the principles involved in the introduction and maintenance of foreign material within the peritoneal cavity. We speak of the material used as wicks or drains, as though it continued as do most wicks or drains elsewhere to act in such a capacity for an indefinite period. That such is the case in some measure is evidenced by the continuous discharge which commonly follows their introduction. That this discharge, however, comes from a very limited area as relates to the entire peritoneal cavity, we must have clearly in mind in deciding as to where, when and why we place this foreign material which we call wickage into the peritoneal cavity. We have always maintained that drains inserted to drain the whole or any, even moderately large, part of the peritoneal cavity did not accomplish their purpose and that their use based upon such a conception of their function was for the most part futile. It has been our feeling that drains for a short time might remove a very small percentage of any noxious material which might be scattered throughout the peritoneal cavity, but that they in no way limited the spread and production of that noxious material if its origin was at a part more than a few inches distant from the point of the drain and that the ill effects of this material diffused over any considerable surface of the peritoneal cavity were in no way lessened or offset by the introduction of a drain at a point any distance from the origin of the material. Drains are of value primarily to produce walling off adhesions about a locally infected area of peritoneum, to produce a sinus down to this locally infected area along which the resulting purulent material may discharge, to produce a sinus along which the discharge from a possibly perforating viscus (necrotic caecal wall) might discharge, to control ooze by packing, to establish sinuses to cavities which might later become infected, to drain hollow viscera without spreading their dangerous contents over the peritoneum with detriment to that structure.

We should think of drainage as far as septic drainage goes as doing only two things: one, producing walling off adhesions and limiting the septic process to an area of small dimensions around its origin, and, two, as establishing a sinus down to this area.

This conception of drainage is supported by the experimental work of Dr. Fred T. Murphy, published in the BOSTON MEDICAL AND SURGICAL JOURNAL, Jan. 12, 1905, Vol. CLII, No. 2. These extremely practical and convincing experiments demonstrate conclusively, I believe, the correctness of the above stated functions of drains and the incorrectness of the conception of those who advocate dependent drainage in the peritoneal cavity, as, for example, drainage of the pelvis in perforated gastric or duodenal ulcer with the intention of draining the entire peritoneal cavity.

That the plan of the experiments may be understood and for the benefit of those to whom the original article may not be available, I quote the gist of the report:—

"Observations on Experimental Drainage of the Peritoneal Cavity of Cats. Fred T. Murphy, M. D., Boston. BOSTON MEDICAL & SURG. JOUR., Jan. 12, 1905. Vol. CLII. No. 2.

"The purpose of the experiments was to determine the time which elapsed between the introduction of a drain and the formation of walling off, sufficiently strong to prevent the drainage of the peritoneal surfaces not in direct approximation to the drain."

"Technic of the experiments: An incision was made over the left rectus muscle just above the bladder, the peritoneum opened and the drain directed into the pelvis on the left of the large intestines."

"After various intervals of time a second operation was performed. The animals were placed on a board inclined at 20° and the peritoneum opened at the left costal border about 2 inches from the median line and through the opening a funnel was introduced to the left of the large intestine, so that there would be no barrier of mesentery between the fluid and the drain. The belly was then filled with a gelatine mass stained with carmine. With the body at an angle of 20° the level of the gelatine in the epigastrium was higher than the external end of the drain, so that if the drain was not walled off by adhesions there must be an escape of the fluid which when warm is like water. Animals were kept in the inclined position for 10 minutes after introduction of fluid. If the fluid did not escape freely within the prescribed interval the animals were killed painlessly, the bodies were placed in cold storage and examined after the gelatine had set. Gauze, rubber tube, glass tube and cigarette drains were used."

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*Read by title.

"Roughly summarized, gauze and cigarette drains were walled off and failed to drain the general cavity after about 18 hours, and rubber dam and glass tubes after about the third 24 hours."

"Theoretically, drainage would seem to be of great value in those cases in which it is desirable to make a limited septic area extraperitoneal. The value of a drain as a drain of the general septic cavity after about 72 hours could not be demonstrated."

With the above stated views as to the principles in mind, we have also for a good many years insisted that if the basic principles of drainage are limiting an infected area by the production of walling off adhesions and the establishment of a sinus to it, then drains should be allowed to remain in place until both of these desired features have been attained and in addition such a sinus established, that when the drainage material was removed, a canal of sufficient rigidity remained as to permit adequate discharge and closure from the deepest portion outwards or the easy reintroduction of a small piece of rubber tissue so that collapse of the sinus and a secondary abscess did not form at the innermost point of the drainage canal. Because of this we have never been in sympathy with the so called prophylactic drain inserted for 24, 48, or 72 hours and then withdrawn. It has been our policy to decide for or against drainage and if drainage be used to allow the drain to remain in place for seven to eight days, when it is removed completely and the external opening of the sinus kept open, if necessary, by the introduction of a small section of rubber tissue.

With the employment of such a procedure we have but once seen the occurrence of a small walled off abscess at the bottom of the sinus due to premature collapse of its walls.

We believe that the location of drains in the peritoneal cavity is of the greatest importance particularly as to the production of adhesions causing post-drainage intestinal obstruction. It is highly desirable that drains in the right iliac fossa be placed, if possible, external to the caecum between the external wall of the caecum and the external parietal peritoneum. Drains placed here possess almost no possibility of producing post-operative intestinal obstruction, since almost all of the obstruction of that variety is due to involvement of loops of small bowel. This same precaution should likewise be taken on the left side where drainage is occasionally necessary for intraperitoneal abscess secondary to diverticulitis.

In the pelvis on the left side it is posisble to so place the drain to the left of the sigmoid that it is practically extraperitoneal as far as its relation to small bowel goes. On the right side this is not possible, but in all pelvic drainage where a normally long omentum exists the drain should be placed in the very lowest possible portion of the wound, directly over the pubes and the apron of omentum or the fold of redundant sigmoid laid behind it over the loops of bowel (commonly ileum) which hang into the pelvis, to prevent adhesions of these loops to the drainage tract.

Drainage beneath the apron of omentum directly into the central coils of the small bowels should be avoided, if possible, and fortunately abscesses in this location, except as broken down tubercular mesenteric lymph nodes, are rare. In the same way the introduction of a drain into the apex of the angle made by the junction of the ileum with the caecum is to be avoided, since angulation of the ileum by involvement in exudate is particularly prone to occur at this point and produce intestinal obstruction.

As to the type of drain to be used, the conclusions of Dr. Murphy bear out what now represents common clinical experience. That is, that the material which is walled off most quickly, thus producing the quickest possible extraperitonealization, is gauze, but that unfortunately this material is most difficult to remove and produces the most extensive type of adhesions. That for practical purposes walling off is accomplished in approximately the same short period of time by the much more easily removable cigarette drain is further borne out by these experiments. Where quick walling off is not desired but drainage of the entire cavity over the greatest period of time is sought, rubber tissue is demonstrated as the most desirable form of drainage.

CONCLUSIONS

The principles of intraperitoneal drainage are largely that the drains produce walling off adhesions about a septic area as soon as possible and establish a sinus down to that infected area.

The concluison of experiments conducted in 1905 by Dr. F. T. Murphy indicate that gauze and cigarette drains are walled off and fail to drain the peritoneal cavity in 24 hours and glass tubes and rubber dam at the end of the third twenty-four hours.

Drainage for intraperitoneal infection is of value only when that process is so local that it can be made extraperitoneal by the walling off adhesions which surround the drain.

It is desirable to allow drains to remain in place long enough to produce a satisfactory sinus down to the area to be drained.

It is important that drains be so placed as to avoid adhesion within the loops of small intestines.

The most desirable type of drain for general use in intraabdominal drainage is the cigarette drain.

SOME URGENT SURGICAL CONDITIONS OF THE ABDOMEN*

BY HORACE P. STEVENS, M. D.

It is the purpose of this paper to review, or to be accurate to skim lightly over, some of the more common conditions in the abdomen of sudden onset or rapid development requiring immediate surgical intervention. The consideration of these conditions in an orderly manner is difficult as they are varied and of rather wide distribution, but a moment's thought will show that they all fall into two classes—1. ruptures or perforations, and 2. obstructions. Ruptures may occur of solid viscera, hollow viscera (including ducts and blood vessels) or of abscesses. Obstructions may be of any of the hollow viscera including blood vessels and ducts.

It will be seen that many conditions might properly be classed under both of these divisions, as, for example, a ruptured appendix, from the point of view of pathology, might be classed as an obstruction of circulation by septic thrombosis with resulting gangrene, while from the clinical aspect it is essentially a perforation. Such conditions I shall classify according to the way they chiefly manifest themselves.

Let us first, then, take up the group of ruptures and perforations. They may be subdivided into traumatic and non traumatic and the latter group again into erosive and septic, although such classification is obviously inexact.

TRAUMATIC RUPTURES

The traumatic ruptures are represented, in the first instance, by the various results of blows, falls, or compression injuries. These cases present, in varying degree, a condition of abdominal shock appearing almost immediately after the injury with pallor, anxious expression, shallow and rapid respiration and feeble pulse. The abdomen will almost invariably have the appearance of severe intra-abdominal injury which may be deceptive and this must be considered in all cases. Many times these symptoms will gradually clear up and it will be found that no serious intra-abdominal injury has been sustained, but "armed expectancy" in these cases must be carried on with great watchfulness as an extremely dangerous policy. If the symptoms of shock do not rapidly clear up immediate operation is demanded. As has been well said, "the indications for such operation are not, and ought not to be, the signs of peritonitis." Treatment, to be successful, must be carried out early and in doubtful cases it is better as a rule to operate.

Intra-abdominal injuries when present may include lacerations or ruptures of any of the abdominal or retro-peritoneal contents, or of a pre-existing pathological lesion such as an abscess or cystic tumor. Most commonly involved, perhaps, are the liver, spleen, kidney, mesentery, bladder or gravid uterus. The symptoms and signs are those of shock, hemorrhage and peritoneal irritation with occasionally some localizing sign such as hematuria, etc.

The two most important signs are a rising, weak pulse and rigidity of the abdominal wall, with or without distention. In conjunction with these there will probably be subnormal temperature, pallor, anxious expression and depression or restlessness. Tenderness is apt to be general. If localized it may as well represent local bruising of the abdominal wall as any deeper injury. Dullness, fixed or shifting, or obliteration of liver dullness are of interest and importance when present.

The picture is usually clear but some cases call for a nicety of judgment. In these latter let me repeat, as I shall have occasion to do more than once in this paper, do not wait for positive evidence or for vomiting, rising temperature or other signs of peritonitis. When in doubt—explore. We must reverse the usual legal formula; the accused must be presumed guilty until proven innocent.

When operation is undertaken it will usually be done in the presence of shock and every effort must be directed toward supporting the patient and combatting further shock. Local anaesthesia should be used, augmented if necessary by general anaesthesia, during the period of intraabdominal manipulation. As distinct localizing signs are generally not present the choice of incision will usually be a median one. On opening the peritoneum the appearance of the contents will often be a most valuable guide to the type of lesion. Intestinal contents may, by their character, indicate rupture of the stomach, the intestine or the colon; free blood, of course, means rupture of a vessel or a vascular organ like liver or spleen; a distinct odor of urine points to the bladder, etc.

Whatever fluid present should be sponged away and if the source of the trouble is not readily made out at once, or is not easily accessible, the incision should be enlarged sufficiently so that the operator is not cramped for room. Just a word in this connection:—if it becomes necessary to enlarge the wound downward watch out for the bladder, it may appear as a dark rounded mass from ecchymosis and easily be taken for a large clot. Search for the damage should be carried on with as little displacement of viscera as possible, but a complete exploration of the abdominal cavity may be necessary before it is found, and the possibility of multiple injuries must be borne in mind and one should be reasonably certain that he is not overlooking anything.

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*The Annual Oration delivered before the Middlesex South District Medical Society, April 16, 1924.

Once the lesion is found its relief may require any of the abdominal surgical procedures and the operator may find himself let in for anything, from a simple ligation to an intestinal resection, a Porro or a splenectomy. The question of drainage of course depends on the nature of the lesion and then on the judgment of the operator in the individual case, but it is a safe rule never to drain unless potentially septic material has been spilled into the peritoneal cavity, that is, in simple hemorrhage wipe out the clots carefully but do not drain except where packing is required to control bleeding.

Next come lacerated wounds, stab wounds and gunshot wounds. These present a problem practically identical with the foregoing group with the exception that we have external evidence to guide us as to the location of the injury, and in the case of small perforating wounds, such as stab and bullet wounds, the initial shock is usually much less and may be insignificant. These two points of difference may complicate rather than simplify the problem. In the first place, bullets and even knife blades are extremely unconventional in their courses, so that they may turn up in most unexpected places and the absence of early symptoms may lull us into an unwarranted complacency, or keep the patient from seeking our advice until much valuable time has been lost.

Just a case or two in point:

Case 1. A stout Italian of 40, brought to the hospital by the police as one of the victims of a shooting affray. He seemed in good condition, showed no evidence of shock, but was highly excited from recent events. The police said that he had been engaged in a pistol duel at close range.

Examination showed a bullet wound close to the mid-line about half way between the ensiform and the umbilicus, and a second wound lower down, apparently pointed downwards. He was etherized and exploration of the lower wound showed that it travelled down outside the external oblique fascia and the bullet was lodged superficially in the thigh.

A median epigastric incision was made in the region of the other wound with the expectation of finding a hole in the stomach or transverse colon, but before the peritoneum was opened the bullet was located lying beneath the rectus muscle and not having perforated the peritoneum. Apparently the shot was fired from a dirty revolver and lacked the force to penetrate an unusually thick abdominal wall.

Case 2. Another case was that of a man, shot in a similar pistol duel, who came into the hospital showing very little evidence of shock, presenting a wound of exit and a wound of entrance in the left lower quadrant of the abdomen, lying within three inches of each other. From the appearance of the wounds it seemed almost impossible that any intra-abdominal injury had been done. They lay so close together that it seemed as if the bullet must have simply traversed the subcutaneous tissue. Exploration, however, disclosed that the bullet had entered the abdominal cavity and produced two perforations—one in the small intestine and one in the sigmoid.

Case 3. A third case was that of a young woman, the victim of a murderous attack with a knife. She exhibited a wound in the left mid-axillary line at the level of the fourth rib, and, although she showed no particular shock, the house-officer reported to me that lung tissue was protruding from the wound. When I arrived I found that this tissue was not lung but omentum infiltrated with blood. It was evident that the knife thrust had been in a downward direction and had gone through the diaphragm.

Exploration showed that the knife had travelled downward outside of two ribs and then turned inward and passed through the diaphragm, traversing the surface of the spleen, producing a wound in that organ about two inches in length. The portion of the omentum protruding from the external wound was tied off, the remainder pulled down from within the abdomen. The opening in the diaphragm was closed with difficulty. The wound in the spleen was fortunately superficial enough so that there was no severe hemorrhage and did not require attention.

These cases illustrated how uncertain the external appearance of a wound may be as to its final course.

NON TRAUMATIC PERFORATIONS OF THE EROSIVE TYPE:

1. *Perforating peptic ulcers*:—The perforation of the peptic ulcer is an abdominal accident of sudden and impressive origin. If all the facts are obtainable it is usually easy of diagnosis but the diagnosis must be made and the operation undertaken early. In many other acute abdominal conditions, early operation, while desirable, is not absolutely necessary, for if it is not done a later operation may, to some degree, repair the damage, but in perforating ulcers delay is fatal—there is no reprieve. Exceptions to this are so rare as to be distinct curiosities. If operation is undertaken in the first six to eight hours it is usually successful. From eight to sixteen hours the results are uncertain. If over eighteen hours, and particularly if over twenty-four hours, the results are almost always fatal. As Cope says, "the very possibility of any condition being due to a perforated ulcer is a positive indication of immediate solution of the problem."

The symptoms and signs are usually clear cut; the onset is sudden with severe pain and immediate shock dependent on peritoneal irritation from the discharge of gastric contents on to the peritoneal surface. The pain is usually epigastric at first, but often shifts to the lower abdomen and, in case of ulcer near the pylorus, is particularly apt to localize in the right iliac fossa where it may closely simulate the pain of appendicitis. Immediate shock is usually severe with subnormal temperature, thin rapid pulse, shallow respiration and an anxious pallid countenance. It may amount to collapse with actual loss of consciousness. There may be vomiting but more likely there will be unproductive retching—vomiting of blood is not usual. Not uncommonly there is reflex pain at the top of one or both shoulders. This is usually of rather short duration and if it involves both shoulders is particularly suggestive of a perforating ulcer. Unilateral pain of this type is often seen with conditions above the diaphragm. The more intense symptoms usually subside considerably in a short time, perhaps one to two hours, and the patient looks and feels better—pulse and temperature improve and vomiting ceases, but abdominal tenderness and marked rigidity and retraction of the abdominal muscles, which have developed early, persist. The respiration continues shallow and costal in type. Rectal examination will often disclose pelvic tenderness due to gravitated fluid and there may be signs of free fluid or gas in the abdominal cavity as evidenced by shifting dullness in flanks, or by obliteration of liver dullness. In looking for the latter sign one should percuss in the mid-axillary line as resonance over the front of the liver is often due to a distended colon being pushed up, while any marked resonance in the mid-axillary line two inches above the costal border is definite evidence of free gas. Small amounts of gas in the abdominal cavity may be demonstrated by X-ray, if this is available without delay, and show as a layer of gas below the diaphragm, above the liver.

This stage of the condition is the one in which most of the cases are seen, as the initial shock is often over before the physician arrives. In fact, I have heard it stated in discussion on this subject, that shock is a late development in perforation, but the symptoms of this preliminary shock are so impressive that one seldom fails to get a history of them if he is looking for it. The fact that the patient feels better at this time must not be allowed to mislead one, for if action is delayed the patient soon passes into the stage of definite peritonitis. This is manifested by increasing distention, persistent vomiting, rapid small pulse, more labored breathing, rise in temperature, with diminishing abdominal rigidity, and the typical facies of peritonitis.

Cases seen in the stage of initial shock will usually be recognized as abdominal accidents requiring surgical intervention but the exact diagnosis will often be doubtful. A previous history suggestive of ulcer may be obtained and give the necessary clue but it is not uncommon to find these patients giving no evidence of previous indigestion. Thus with a history of previous gastric trouble the diagnosis may be presumptive, without it, it may not be possible to rule out other surgical conditions of similar intensity.

When operation is undertaken the question arises as to how much should be done. Simple closure, with or without drainage, and closure plus gastro-enterostomy both have their ardent supporters. Personally, I have never been enthusiastic about doing any more than was necessary to these cases, and so favor doing gastro-enterostomy at this time only in the exceptional case. Also, I have never been content to close without drainage, although such eminent men as Gibson report unusually good results with this method.

Perforations of intestinal ulcers other than the peptic ulcers, such as typhoid ulcers, are rare and will not be considered here.

2. *Ectopic gestation* represents a quite different sort of perforation but one of the erosive type. Here we have an abdominal condition of rather common occurrence, presenting such definite symptoms that it ought seldom to be overlooked, yet frequently is, and which may, from its very onset, symptomatically speaking, or at any time thereafter, present a condition of the utmost gravity. The symptoms of this condition are particularly definite and exceptionally logical, if I may use such a term. By that, I mean they are distinctly what they ought to be considering what is going on, as Polak has frequently pointed out. The impregnated ovum is held up in its passage down the tube and comes to rest usually in the ampulla, less frequently in the isthmus, and rarely in the interstitial portion. This failure of descent to the uterine cavity is due to some constriction in the tube or less frequently to development of the ovum, before descent begins, to too great size to pass through a normal tube. Thus the condition occurs most frequently in women who have had some pelvic inflammation or pelvic operation and, secondly, in those prone to developmental difficulties, as, for example, the type of woman who has always had marked dysmenorrhea and who remains sterile for a long time after marriage, and less commonly in women who have had a number of normal pregnancies. The ovum having attached itself to the wall of the tube, a process of erosion is at once started owing to the fact that the tube is not equipped to develop a satisfactory protective decidua as in the case of the uterus. This gives rise to indefinite pelvic pains which may not particularly impress the patient at the time. As erosion goes on there is hemorrhage into the tube with distention of the tube and partial or complete separation of the ovum. This causes a feeling of pelvic soreness and tension and, as the tube attempts to empty itself, tubal colic. Tubal colic produces peculiar stabbing pains that often shoot to the upper abdomen, either to the epigastrium or on the side of the affected tube and cause a typical catching of the breath. This pain of tubal colic is very characteristic and is seen both in ectopic and certain cases of salpingitis.

The blood in the tube escapes through the fimbriated end into the peritoneal cavity and produces signs of peritoneal irritation—a slight rise of temperature, moderate elevation of white blood cells, sometimes vomiting, and, as the blood accumulates in the bottom of the pelvis, the characteristic tender mass in the cul de sac, the irritation of the rectum, with tenesmus or painful defecation, and the sensitiveness of the cervix to motion. At the same time the irritation in the tube is transmitted to the uterus and uterine bleeding occurs. This uterine bleeding is dark brownish red often mixed with mucous and *does not* clot. If the ovum dies the uterine decidua is cast off, rarely in toto as a uterine cast, but usually in shreds.

The condition goes on either to tubal abortion, which is the most common, or to rupture of the tube. These two only differ in the intensity of their manifestations. In the former, there may be very little constitutional disturbance while the latter may exhibit symptoms of the gravest hemorrhage. As the condition is a pregnancy, there is always some menstrual irregularity. This may be a missed period, a delayed period, a prolonged period, or a period at the normal time but of abnormal character. The departure from the normal may be so slight as to be overlooked by the patient but is always present in some degree. A careful history is most important. If every case of a woman in the child-bearing period presenting a disturbance in the menstrual function, together with cramp-like pains, is considered as a possible ectopic, and if the course of events in such cases is borne in mind in taking the history and making the examination, few cases will ever be overlooked.

Every case deserves immediate operation as soon as the diagnosis is established. We never know which case is going to rupture or when. I cannot subscribe to the idea that severe ruptures should be given an opportunity to rally from shock before operation. I have seen a number of cases absolutely pulseless that were found to be still actively bleeding when the abdomen was opened and I can see no reason to suppose that such bleeding would stop of itself short of a fatal outcome, and such cases have rallied well after operation followed by transfusion or intravenous saline infusion.

SEPTIC PERFORATIONS: For convenience I have classed as septic perforations those which occur as the result of septic gangrene. It is obvious that, when seen, many of these cases have not reached the stage of perforation but it is the possible imminence of such accident that makes them surgical emergencies. Of these, *acute appendicitis* is, of course, the most common. It is unnecessary to say much about the ordinary case of acute appendicitis. Its characteristics are almost household knowledge; it is one condition that everyone is on the lookout for and it is always one of the things considered in the diagnosis of an acute abdominal condition.

It is of the unusual case that I want to say just a word, and of some of the minor characteristics of the condition in general. It has been said that the only real bad cases of appendicitis are the neglected ones. With the exception of the occasional fulminating case this is probably true if one means by "neglect" that operation has been delayed too long. But the term "neglect" should not necessarily carry with it any rebuke. Such neglect may be due to the patient's not considering himself ill enough to seek a physician's advice, or to the doctor being misled by a development of the disease so insidious that there is little evidence on which to base a diagnosis until the condition is well advanced. It is these cases of insidious development that are most dangerous. They are commonly of the retro-cecal or pelvic type and occasionally occur where the appendix lies along the outer side of the ascending colon, and they are most frequently seen in people past middle life. They come on gradually with rather mild symptoms that are usually taken for simple indigestion. The patient usually makes an effort himself to get the bowels thoroughly emptied before calling for his physician. When seen the signs may be very slight with little evidence to locate the condition in the appendix region. Often it is not until there is definite spreading peritonitis that the symptoms and signs become sufficiently well marked to force serious consideration.

A case or two will illustrate this type of condition:

CASE 1. A man of 67, in rugged health, was taken down with headache, slight temperature and general malaise with no particular elevation of the pulse. He thought he was coming down with a cold and took a laxative because his bowels had been somewhat constipated before the onset of the trouble. The next day he complained of some backache, pains in legs and mild discomfort in his stomach. Examination was essentially negative, the abdomen being perfectly soft and showing no tenderness at any point.

The following day, in the morning, he appeared about the same, but had a slight diarrhoea. There was slight general abdominal tenderness which was not localized at any place, and some cramp-like pains. Rectal examination was negative. That afternoon his temperature rose to 101.6 and pulse began to go up, and he rapidly developed distinct tenderness well down in the right flank, above the crest of the ileum, associated with distinct muscular spasm. There was no vomiting and had been none. The patient felt chilly, but had no distinct rigor.

Operation was undertaken as soon as arrangements could be made. The appendix was found lying behind and to the outer side of the cecum, entirely gangrenous throughout and surrounded by dirty, foul, watery fluid. There was some turbid fluid in the general abdominal cavity.

Following appendectomy with drainage, condition went on to general peritonitis, rapidly, and the patient died in four days.

CASE 2. A woman of 67, who was taken with distress across the upper abdomen shortly after eating her lunch. She had had numerous attacks which had been called "galistones," and was accustomed to having more or less indigestion at times after eating.

That night the distress became worse and she complained of severe upper abdominal pain during the night. In the morning her physician was summoned and found her suffering from considerable pain, showing moderate general abdominal tenderness but nothing particularly severe. He thought the condition was due to another attack of gall-bladder disease and gave her morphia. Late that night the pain had grown worse and had shifted to the lower abdomen and pelvis, and the patient began to vomit for the first time. During the night she required morphia twice.

The following morning, when seen, the patient looked very sick and was still very nauseated, but the pain had been relieved to a large extent. The bowels had moved on the night of onset and not since. Abdomen was distended, tongue dry and the patient's color was cyanotic. The abdomen was soft, but extreme tenderness had developed across the lower half and rectal examination showed a marked tenderness throughout the pelvis. Operation was immediately undertaken.

On opening the abdomen a very fat and redundant omentum was at first encountered. When this was lifted, thin, sour, purulent material was encountered and the loops of the intestine were found considerably injected. The appendix was found lying deep in the pelvis, entirely gangrenous and surrounded by foul colon bacillus pus.

Following appendectomy with drainage this patient put up a stiff fight against peritonitis for seventeen days, at the end of which time she finally succumbed.

These cases are typical of their type and, as has been said, are most common in patients past middle life. The second case emphasizes the importance of rectal examination. If the physician in this case had made a rectal examination earlier he would have undoubtedly found marked tenderness present but as the symptoms were all in the upper abdomen, and as the patient had had previous attacks of gall bladder disease, he was misled into supposing that this was an attack similar to previous ones.

The fulminating type of case is fortunately rare. When we encounter one, however, it is often particularly discouraging but at least it may, in some degree, reconcile us for having insisted on immediate operation in other cases which have turned out to be much milder than were expected.

A girl of 15, who had previously been perfectly well, awakened one morning with sharp cramps all over the abdomen. Shortly afterwards she began to vomit and following this had diarrhoea. She was seen within a couple of hours and by that time the symptoms had shifted to the right lower quadrant. She was having such severe pain that morphia was necessary and she was taken immediately to the hospital.

Operation was undertaken within six hours of the onset of symptoms. On opening the abdomen profuse, thin, sour pus was encountered. The appendix lay free, with no evidence of protective walling off, and was practically gangrenous throughout, with a large perforation near the base. Following appendectomy with drainage the patient rapidly went on to general peritonitis and died in three days.

This case is not only an example of the acute fulminating type of appendicitis but also illustrates a case with diarrhoea. We are more or less prone to think of constipation as a classical symptom of appendicitis, but diarrhoea is much more common, especially in children and the older adults, than we ordinarily think of it.

Another small point in children is that frequently we see sudden loss of appetite as a marked symptom. This probably represents nausea in the child oftentimes but is not so described by him. In children, also, we hear much of the danger of error in diagnosis in cases of pneumonia. This has been emphasized so much in discussions of this subject that everyone is tired of hearing it but still it is an error often made. Nevertheless, it must be recognized that the thing can work the other way. It is not at all uncommon for an attack of appendicitis to follow a cold. Under such circumstances it is easily possible to be so much on the alert not to get caught operating on a pneumonia, that one may miss a real appendix until it is advanced to a dangerous stage.

Any discussion of operative technique in appendicitis usually results in bringing out only some of the speaker's hobbies as to small details. There are, however, one or two general points that I should like to mention:

1. The usual right rectus incision is an extremely poor incision for drainage. For this reason when the use of drainage is anticipated the muscle should be split instead of retracted. This gives a straight channel for the drain and permits much easier replacement when the original drain is removed.

2. The location and position of the appendix should be made out if possible before any great amount of walling off gauze is placed. If this is not done the gauze may be so placed as to materially add to the difficulty of delivering the appendix when it is found, and when once placed it is not a good plan to remove it and replace it after one has begun to handle the appendix.

3. It is needless to say that the appendix should be removed with as little trauma and with the exposure of as few loops of intestine as possible.

4. In bad gangrenous cases, particularly when surrounded by adhesions around the head of the cecum, care should be taken to get the whole appendix and not leave any stump.

Within the last year I have seen three cases presenting acute symptoms in the right lower quadrant, coming on from three to six years after appendectomy, in which at operation gangrenous and perforated appendix stumps, one-half to three-quarters of an inch long, were found.

The ordinary case of *Cholecystitis* is not an emergency and though early operation is desirable it is not usually undertaken, the patient as a rule requiring several attacks before becoming convinced that surgical treatment is necessary. It is only when rupture is imminent or has actually occurred that these cases are urgent.

Fortunately this situation *usually* forces itself upon our attention and is not easily overlooked.

These cases are of two rather distinct types representing the same pathology but differing in the rapidity with which they develop.

The first are those which come on suddenly like the fulminating type of appendicitis. The patient has often had a number of previous attacks, but occasionally it may occur in a first attack especially following some acute infection elsewhere. The onset is sudden and very severe with extreme pain, often a sharp chill and marked shock. Vomiting is almost always present and may be persistent. The patient immediately presents a picture of grave abdominal accident with exquisite tenderness and rigidity through which a distended gall bladder can often be felt. There is no doubt that something must be done and quickly.

The second type comes on more like an ordinary attack. The physician is called and gives a sub-Q as he has perhaps often done before. This is followed by relief, but as the effect wears off the symptoms return requiring more morphia with the same effect and the same return after an interval of relief. At the same time with each return of symptoms the local signs are apt to be more distinct and the temperature and pulse may show a steady upward tendency. With such a picture, especially with a palpable gall bladder, one should be extremely suspicious of a gangrenous gall bladder with impending rupture.

As an example of each of these types let me cite the following:

1. A woman of 51, who had been having attacks of gall bladder disease for six or seven years, was taken in the afternoon with a severe colic and vomiting. Within a short time the pain became excessively severe in the right hyperchondrium and epigastrium, extending through to both sides of the spine, and patient went into profound collapse, was cyanotic, pulseless, and looked as if she would die at once. Under stimulation she gradually rallied somewhat, although in the morning, when I saw her, she was still having severe pain, with color somewhat dusky and heart action weak but regular. The abdomen was soft except in the right upper quadrant and epigastrium, where there was moderate spasm and most intense tenderness.

She was taken to the hospital and operated on at once. The gall bladder was found surrounded by tense adhesions into which it had ruptured with the escape of thick pus. The fundus of the gall bladder was simply cut off, rubber tube sewed into the gall bladder and cigarette wicks to the flanks and Foramen of Winslow. She left the table cyanotic, pulseless at the wrist, with weak heart sounds at the apex, but under stimulation gradually rallied and made a slow recovery, during which she developed a mild septic parotitis, which subsided after a time.

2. A woman of 55 had been having gall bladder attacks for four years. On July 13 she started with a rather severe but typical attack. This was relieved by morphia but returned after several hours; morphia again gave relief for a short time, but the pain returned. When seen on July 16, three days after onset, she was somewhat relieved, but had become quite jaundiced. She was put under observation with the idea of delaying operation until the jaundice subsided, as the attack seemed relieved.

On July 18 she decided not to have an operation and went home in spite of our advice. Two days after she went home the symptoms returned and she went through the same sort of thing, with pain returning after effect of morphia had subsided, until July 25, when she accepted operation.

Gall bladder was found much thickened and very tense, surrounded by some light adhesions. When grasped the gall bladder peeled immediately away from the liver without effort and causing no bleeding. At the cystic duct it was entirely gangrenous and tore off before it could be tied. Recovery was smooth and uneventful.

As to operative procedures:—In the first place I am, personally, very enthusiastically in favor of a transverse incision in all gall bladder work, although I realize that this is not the classical method of approach and I am very much in the minority in using it. But, after all, that is a very minor point. The important question is what to do with the gall bladder. Everyone will agree that these types of gall bladders should all be removed, if such a thing were feasible, however he may feel about gall bladders in general; but these cases present the greatest difficulties for complete removal and at the same time the patients are much less able to stand difficult and prolonged operation. The best solution probably is to remove as much of the gall bladder as can be gotten out easily and quickly, and drain the rest. Stones when present should be moved if possible.

Acute pancreatitis is fortunately a rare condition. It is probably always dependent on some infectious process elsewhere, most commonly in the gall bladder or the appendix. It usually occurs in patients past middle life and is more frequently seen in men. It comes on with extremely severe and acute symptoms and simulates closely perforation of the stomach or gall bladder. The pain is very severe, usually in the epigastrium and may radiate to the left shoulder. Shock is profound and vomiting severe and frequent, and not infrequently there is a peculiar cyanosis which is said to be diagnostic but does occur sometimes in other upper abdominal conditions. The diagnosis is frequently not made before operation but there is never any doubt of the existence of a surgical emergency.

At operation the presence of dark bloody fluid and fat necrosis clinches the diagnosis. The pancreas should be freely exposed through the gastro-hepatic omentum, its tension relieved by multiple punctures or short incisions and a large drain placed. Occasionally a second drain may be placed to advantage through a counter incision in the back, at the left costo-vertebral angle. If the gall bladder is badly inflamed or contains stones it should be evacuated and drained, if the patient's condition permits. While acute pancreatitis carries a very high mortality, operation, if undertaken early, will save a considerable number of cases.

The acute rupture of a ***diverticulitis*** of the sigmoid is an uncommon occurrence but one of extreme gravity. It usually simulates, closely, a gangrenous pelvic appendix and seems to produce, as a rule, a particularly virulent peritonitis. Curiously enough, as far as results go, it seems to differ greatly from a perforated cancer in the same location; for some reason or other in the latter the infection is seldom as virulent, the symptoms seldom as acute and the immediate results much more favorable.

OBSTRUCTIONS (INTESTINAL)

Acute intestinal obstruction in some of its various forms is one of the commonest surgical emergencies. In general with the other abdominal emergencies early diagnosis and operative relief is essential to good results. As all the various types fall into the same catogory, as regards early operative treatment, it is not essential always to determine beforehand the particular form of obstruction but such information is extremely desirable in order that relief may be obtained by the simplest operative means. The most frequent type of obstruction is strangulated hernia, and although it ought to be the easiest in which to make an early diagnosis, it causes more deaths in the aggregate than any other type.

The three conditions of next commonest occurrence are adhesions and bands, carcinoma or other intrinsic tumor, and intussusception. More rare causes are volvulus, extrinsic tumors and foreign bodies. The common causes outside of strangulated hernia fall into three groups as regards age incidence. Those caused by adhesions and bands are most commonly found in childhood and early adult life. Carcinoma is of course largely a condition of late adult life, while intussusception is very largely confined to infants and young children.

Complete obstruction is always fatal unless relieved by operative means, except in such rare occurrences as the spontaneous reduction of herniae, the sloughing out of intussusception or the spontaneous formation of fecal fistula.

The operative mortality is very high in most of the types and could be vastly improved if early operation were more common. Operation within the first twelve hours after onset ought to be successful in the great majority of cases.

The symptoms vary considerably with the site of obstruction; generally speaking, the higher up the more severe the symptoms. Pain, often of the greatest severity, may be general or local and is usually spasmodic, but where any great amount of mesentery is pinched the pain is apt to be constant. It is more severe as a rule in high obstruction of the small intestine and less so in the large intestine, with the notable exceptions of volvulus and intussusception. Initial shock may be present but is usually not as severe as in the perforation. Like pain, it is more severe in the high obstructions and may be slight in the large gut except in the case of volvulus. Vomiting is almost always present but varies greatly in the different types. In high obstructions it comes on very early and is severe and frequent, consisting first of stomach contents and then of green and bilious material. Lower down it comes on later and, in the lower obstructions, as time passes, it becomes yellow or brownish and develops fecal characteristics. In large bowel obstruction vomiting is usually a late symptom and is less frequent except when induced by the initial pain.

Obstruction is not always evident at first. The bowel below the point of obstruction may be emptied spontaneously or by enemata. Even repeated enemata may give results in high obstructions, but after the large bowel is once emptied no more gas or feces will be obtained. Thus obstipation may be at times a late symptom and, in the presence of an otherwise complete picture of an acute obstruction, time should not be lost trying to prove its presence by repeated enemata—and the use of purgatives is absolutely contraindicated. Distention is usually a late symptom, especially in the higher obstructions. In the large bowel obstructions, especially acute obstruction super-imposed on chronic obstruction, distention may be present from the start.

Sometimes distention may be local; this is especially apt to be true in volvulus when the affected loop may show up clearly. In intussusception any great degree of distention is often quite a late symptom and usually a bad one. Distention, as usually understood, means tympany but a flat distention occurs when the distended loops fill up with fluid, and when present this is a sign of mesenteric thrombosis. Tenderness is usually not great until there is marked distention, when it is produced by overdistended gut; and rigidity is usually a sign of peritonitis. Visible peristalsis is a sign much talked of because when present it is diagnostic. It is not particularly often seen in real acute obstruction but is more often present in subacute or chronic cases.

The symptoms also vary greatly in intensity in the different types of obstruction; pain, shock, and vomiting being greatest in those cases where obstruction is sudden and complete, as in strangulated hernia, internal strangulation or acute volvulus, and milder where obstruction is less abrupt or where a sudden final closure comes on top of a gradually narrowing lumen, as particularly in cancer.

Strangulated hernia—Strangulated hernia is the commonest of acute obstructions. It presents the usual symptoms of obstruction plus a painful, tender swelling in the region of one of the hernial rings. Owing to the fact that the obstruction is caused by a stiff walled ring, gangrene is an early development, and this to a degree counteracts the fact that early diagnosis is easier. The symptoms vary, of course, according to the portion of gut strangulated, in the same way as other obstructions. Frequently the omentum only is caught—in which case there will be pain, nausea, and vomiting and constipation, but not obstruction. If reduction is not easily accomplished forceful methods should not be used, for in the handling there is danger of reduction en bloc which is more apt to occur in old herniae, which have been constantly down prior to the strangulation, with consequent formation of scar tissue and adhesions; and there is always a chance of damage to partially gangrenous contents.

Strangulated inguinal hernia is easy of diagnosis and not often confused with other conditions. The patient has usually had a hernia for some time and has been aware of it, and when it comes down and gets pinched it cries loudly for attention.

Strangulated femoral hernia is apt to be less self-evident as it may be very small and buried in fat; however it will seldom be overlooked if a routine examination of the hernial rings is made in all acute abdominal conditions. An inflamed gland in this region, if accompanied by some other condition producing vomiting and abdominal pain, may easily cause confusion. I recall one very humiliating case of this sort:

> A woman of 40 years was seen in consultation on a Tuesday afternoon. She had been having pain in the lower abdomen since Saturday, with vomiting and moderate fever—100.4. There was a history of having had an attack of grippe a week previously and at that time examination of the urine was said to be negative.
>
> Examination showed a small bunch in the region of the right femoral ring, which was extremely tender; the lower right abdomen was somewhat tender and held slightly spastic. The bowels had moved on Sunday but not since. General physical examination was negative. A diagnosis of strangulated femoral hernia was made and the patient hurried to the hospital, and operation was done under ether.
>
> Exploration of the region of the hernial ring showed the bunch to be an enlarged gland; there was no evidence of hernia. The wound was retracted to expose the inguinal ring, which was found large, and the inguinal ring was consequently explored, disclosing a small hernial sac at the upper end, but there were no hernial contents. The sac was opened and the lower right abdomen investigated through the ring. Nothing abnormal was made out, but a normal appendix, which was lying right in sight, was removed. The entire operation occupied only three-quarters of an hour, but following operation the patient was extremely nauseated and passed no urine for over twenty-four hours. When she was catheterized a very small amount was obtained, which showed blood and many casts, and the patient died of uremia in three days.

In this case, unfortunately, we depended upon a urine examination done about a week before or the error might not have been made. Also, if she had been done under local anesthesia, which we would do today in similar circumstances, the fatal outcome would probably have been avoided.

Strangulated umbilical hernia, while usually very evident, may be extremely misleading. It most commonly occurs in fat people, and as the sac may be very small, unless the onset is acute, it may be overlooked. Also these cases often give a history of frequent acute pains which are relieved after laxatives or enemata, and the patient may delay seeking advice and try the same treatment.

Strangulated ventral hernia, either in scar or of the epigastric type, is rather uncommon but from the point of view of symptoms and treatment is similar in every way to the umbilical.

Strangulation of the rarer herniae, such as obdurator, diaphragmatic, etc., are essentially internal strangulations and not to be considered in the same category as the external herniae.

Operation for external strangulated hernia should always be undertaken under local anesthesia, in my opinion, unless some strong counter-indication is present, such as a very intractable patient. Even when resection of gut is necessary one rarely has to resort to a general anesthetic.

Internal strangulation, whether by bands or adhesions or internal hernia, form the next most common type of acute obstruction. For the most part they are manifested by rather acute onset with symptoms that force serious attention, but occasionally they come on insidiously. Operation should, of course, be undertaken at the earliest possible moment, and will consist either of exploration and relief of the obstruction or of simple enterostomy, depending on the length of time that has elapsed since onset, and the condition of the patient. In the great majority of cases, as commonly seen, enterostomy is all that should be undertaken at this time. The objection to this is the possibility of gangrene of the obstructed loop but often the strangulation is relieved when the pressure is removed by enterostomy, and the danger of even the slightest manipulation in late cases and in post-operative cases, when the patient's resistance is low, can not be overstated. Exploration should be first done with local anesthesia through an incision small enough so that the distended loops can be controlled and not forced out on to the abdominal wall. If there is evidence of much reaction, such as bloody fluid, marked congestion of the intestinal loops, and particularly the presence of dark bluish patches on the intestine indicative of thrombosis, nothing more than simple enterostomy should be done no matter how good the patient's general condition seemed before the operation. If there is no great evidence of peritoneal irritation, then the operator must use his judgment as to how much manipulation may be permitted to find, and relieve the obstruction. This will usually demand a general anesthetic to prevent the patient straining and forcing out loops of gut. If the operator has any doubt about the advisability of such manipulation and search, he will be wiser to stick to simple enterostomy. One need not see how rapidly obstructed intestines turn purple under exposure and handling more than once, to appreciate the truth of this.

Intussusception—is the commonest abdominal emergency in children under two years, it is much less common in older children and rare in adults. It usually attacks healthy, well-nourished babies and over-feeding may be a factor in its production. In adults the commonest predisposing cause is tumor of the wall of the gut, or it may be dependent on a Meckel's diverticulum or an enterolith. It most commonly occurs at the ileocecal valve but occasionally is confined to the small intestine or occurs in the transverse colon, or lower. The point of origin always remains the head of the intussusceptum and invagination proceeds by taking up more and more of the intussuscipiens.

The onset is usually abrupt and severe; the infant suddenly begins to scream with pain, the legs are drawn up and the abdomen held tense while the breathing is short and grunting. This spasm is usually short and when it subsides the child is apparently comfortable and lies quietly until the next cramp. These cramps are repeated more or less frequently and usually, fairly soon, are accompanied by some evidence of shock, such as pallor and a hollow-eyed appearance. As the condition progresses, a sausage-shaped tumor becomes palpable. This tumor may be located almost anywhere in the abdomen, especially in young infants in whom the cecum is very movable. It is best felt by very light palpation, as deep palpation will often force it up under the liver out of reach. The tumor can occasionally be felt to grow harder during the spasm of pain and sometimes presses up so as to be visible at that time. The appearance of a bloody stool is by no means constant but may be present in any degree, from a faint pink stain to the classical prune juice, and is accompanied by mucous. Vomiting is usually not a prominent symptom but often occurs, especially if the child has been fed shortly before. Obstruction may not be complete until late and distention is usually not marked during the early stages.

The advancing intussusception may go on until its head can be felt by rectal examination, or even until it protrudes from the anus. If not relieved the condition goes on to gangrene and peritonitis. Occasionally, especially in older children and less frequently in adults, the condition is spontaneously relieved and recurs a number of times at considerable intervals, before coming to operation.

Operation should be undertaken at once. Attempts to reduce by distention with water or air are dangerous, are rarely, if ever, successful, and never justifiable. A general anesthetic is required except in those adult cases undertaken so late that reduction cannot be attempted. In this type of case the intussusception is a great gangrenous mass and the only chance of a successful result is to leave the whole mass outside of the abdomen and do an enterostomy above it. In the usual case in young children the intussusception should be reduced by gentle taxis and never by pulling on the invaginated portion. As children do not stand enterostomy or resection well, the only hope for consistent success in these cases is to operate in the early stages when reduction is easy.

Cancer with the exception of strangulated hernia is the commonest cause of acute obstruction in patients past middle life. Obstruction is almost invariably preceded by a prolonged period of increasingly stubborn constipation. The tumor, as it grows, contracts until the lumen may become very tiny without impressing the patient sufficiently to cause him to consult his doctor; then suddenly it shuts down and produces a complete obstruction. The onset to this acute stage is usually much less severe than the other forms of obstruction; the pain is sharp and cramp-like but shock is slight and vomiting is a late symptom and often is not severe, while distention may be present from the start in very marked degree. Visible peristalsis is more apt to occur in these cases.

Operation should always be undertaken under local anesthesia and should be limited to colostomy above the point of obstruction, or enterostomy. 'If the patient's condition warrants, exploration, sufficient to determine the possibility of subsequent resection of the tumor, may be carried out, but this ought to be all that is done at this time.

Volvulus occurs by far most commonly in the sigmoid, occasionally in the cecum and rarely has been seen involving the whole small intestine as in a case recently reported by Wheeler. Where the twist is complete the symptoms are very acute and severe, with intense pain, shock, vomiting and rapid and great distention owing to the sudden obstruction of both the intestinal canal and the circulation. In this type gangrene and peritonitis develop early. When the twist is not as complete the same picture is developed but more gradually. In some cases the distention is localized and the position of the involved loop can be made out but the diagnosis is often not made before operation. It is not uncommon to have a history of previous milder attacks that have been relieved spontaneously or by enemata.

Exploration should be done under a local anesthetic but general anesthesia will usually have to be given in addition to obtain sufficient relaxation to untwist. After the volvulus is untwisted, if the loop is viable, a colostomy should be done and this can be done in the affected loop in such a way that the resulting adhesions will prevent a recurrence of the volvulus after the opening has healed. If the loop is not viable it should be resected leaving the open ends of the gut outside the wound for later closure.

The following case is a typical one of acute volvulus:

A woman of 50 had had, during the past ten years, a number of attacks of sharp abdominal pain which were usually relieved in a short time by enemata and which were not accompanied by any particular digestive disturbances. She had previously been operated on for appendicitis. She went to bed feeling somewhat upset and with a little nausea which she thought was caused by something she had eaten that day. During the night she began to have pain similar to previous attacks; in the morning she sent for a nurse, who gave her a high enema, which was not expelled. Following this the pain grew steadily more severe. When seen in the late afternoon the pain was very intense; she had had morphia twice without relief. The abdomen was markedly distended and tender all over, with general tympany. The pain was so severe that she was given ether at once while being prepared for operation.

On opening the abdomen there was an escape of considerable straw-colored fluid, a large cystic mass presented which proved to be an enormous volvulus of the sigmoid, twisted one and one-half turns, and the bowel distended to more than six inches in diameter. The volvulus was untwisted and a Mixter tube sewed in to about its middle. As the incision had been made on the right side of the abdomen, bringing the tube out through this wound so held the sigmoid that the volvulus would be unlikely to recur.

Convalescence was rapid, recovery complete, and the colostomy wound healed spontaneously and rapidly.

Acute obstruction from extrinsic tumors and foreign bodies are rare and need not be discussed here. In the former the tumor is usually easily demonstrated and the latter do not materially differ, in symptoms and indications for operation, from other acute obstructions.

Circulatory obstructions—obstructions of the circulation are represented by mesenteric and omental thrombosis and by twisted pedicles. Mesenteric thrombosis is of two types, the progressive thrombosis, extending backward from a strangulation, which is seen as a late development in this type of intestinal obstruction, and the spontaneous or idiopathic thrombosis, which is presumably of septic origin. The former produces little, in the way of additional symptoms or signs, to the picture of obstruction except that occasionally it is possible to demonstrate the flat distention already referred to. The latter presents a very acute onset with severe pain, shock, and vomiting with rapid distention and, in fact, the picture of a very acute obstruction with possibly again the presence of flat distention. Either type may be suspected but are seldom diagnosed before operation and both are equally fatal in their outcome. The only possible procedure is a high enterostomy which if, done early, may rarely in an unusually mild case give good results. Resection is of no avail as the condition is almost always progressive and if the affected loops of gut are excised will continue to invade the remainder.

A single example of each type may be of interest:

1. A young man of 22, who had been operated on eighteen years before for tuberculosis involving the appendix and omentum, and who had remained well ever since, was a rugged, muscular man, a member of the varsity football team of a New England college. Four days before being seen he was playing football but not aware of receiving any special injury. The following day he was taken with sharp, cramp-like abdominal pains and vomiting. The pains continued growing worse and he could not keep anything on his stomach. Laxatives and enemata were tried, with very little watery result. In spite of continued symptoms, which grew worse, he was watched for four days and then sent home.

When seen he presented a markedly distended abdomen, somewhat tender, particularly on the left side, where there was rather noticeable dullness.

Exploration was undertaken under ether (he should have had a local anesthetic, although in this case the results would not have been different). On opening the abdomen there presented loops of greatly distended small intestine, highly congested and with many dark blue mottled areas. Vessels of the mesentery were markedly engorged, there was much bloody fluid in the abdomen. The point of obstruction, a firm band, was right at hand and was severed and enterostomy was done. The patient went back to bed in bad shape and rallied only temporarily under stimulation, and died next morning.

2. A merchant of 55 went home from business in the afternoon complaining of some discomfort in the abdomen; bowels had moved normally that morning. He had had a cold starting with sore throat and developed a slight cough for four or five days. The pain was not enough to disturb his sleep, but continued in the morning. At about 3 o'clock in the afternoon the pain suddenly became very severe, and he had a chill and sent for his physician. When seen at 4 o'clock temperature was 100.2, pulse 90, and he had severe pain in the right lower quadrant, where there was tenderness and spasm but no vomiting.

He was sent at once to a hospital, pain continued growing worse if anything, and he commenced to vomit, and tenderness in right lower quadrant became exquisite.

Operation was undertaken at 5.30 p. m. under ether anesthesia. On opening the peritoneum turbid fluid, without odor, escaped. The appendix was found to be all right, but some congested loops of small gut appeared. Exploration of stomach, liver, gall bladder, duodenum, lesser peritoneal cavity, and pancreas, kidney and bladder regions and sigmoid were negative. In fact, nothing was found except several feet of small gut, apparently in the lower ileum, that was congested, with its blood vessels engorged and prominent. There was no distention of the loops or sign of obstruction. There was copious fluid, slightly blood stained. Drains were placed to the pelvis and flanks and wounds closed to the drains.

Patient rallied fairly well, pain was less, but vomiting persisted; he improved slowly for four days—peristalsis began, bowels moved, and he began to take some nourishment. He seemed to be progressing favorably until the afternoon of the fourth day, when the temperature, pulse and respiration began to go up, vomiting returned, and he became slightly delirious and died in the night.

This was undoubtedly a very early case of mesenteric thrombosis. He should have had a high enterostomy, but whether this would have availed is extremely doubtful.

Omental thrombosis presents a somewhat similar picture but is less severe and the prognosis is much better, in many of these cases resection of the affected omentum being enough to bring about a successful outcome.

Twisted pedicles are best exemplified in ovarian tumors but may occur in any pedunculated tumor, in the omentum, or in an abnormally mobile gall bladder or spleen. The onset is sudden with very severe pain, often with marked shock and commonly with vomiting. Exquisite tenderness is usual, accompanied by protective muscular spasm, but true rigidity does not appear as a rule until later. The tumor can often be felt, if of sufficient size, but smaller ones are frequently overlooked. The condition goes on more or less rapidly to gangrene and peritonitis, or, in the case of ovarian cyst or hydrosalpinx, there may be rupture sometimes followed by an alarming hemorrhage.

The symptoms may simulate a fulminating appendix, a perforated stomach, a ruptured extrauterine (ovarian cysts seem to be more prone to tortion during pregnancy), or a volvulus or other very acute intestinal obstruction, but there is never much doubt of their being acute abdominal emergencies and requiring immediate operation.

Little has been said in this paper of differential diagnosis. Many of the conditions mentioned may be easily mistaken for one and another but, as they all require immediate surgical intervention, no great harm is done when such an error is made, in fact many times these conditions will be operated on under no more exact diagnosis than acute surgical abdomen. It is the *non* surgical conditions which we must be on our guard against; they are all, as a rule, easily differentiated and, if not forgotten as possibilities, will not frequently be overlooked.

It will suffice at this time merely to mention some of the more common of these:

1—Acute chest conditions—one must remember how these, particularly pneumonia, pleurisy and some chest injuries, produce abdominal pain and rigidity.

2—Influenza—(the so-called "intestinal grippe").

3—Typhoid simulating appendicitis.

4—Angina simulating gall bladder disease.

5—Conditions of the urinary tract, such as uremia simulating obstruction, and pyelitis or calculus simulating appendicitis or conditions of the right upper abdomen.

6—Tabes with gastric crisis.

7—Acute Pott's disease, especially in children.

In conclusion let me reiterate:—The acute surgical abdominal conditions represent a large group of cases carrying a high mortality at best and an appalling one if not treated early. They present problems that demand immediate solution and permit of no temporizing or watchful waiting. Acute abdominal symptoms which cannot be satisfactorily disposed of as non-surgical, and which persist for several hours, will almost invariably fall into this category; and while in no wise condoning half baked or snap diagnoses, and agreeing that every effort should be made to have the diagnosis as exact as possible, delay caused by elaborate and time consuming methods is not justifiable. It is much better to open an abdomen unnecessarily once in a while, especially with local anesthesia, than to let one of these cases go on until it is too late to do anything.

A CLINICAL STUDY OF DEFICIENT ANTERIOR PITUITARY FUNCTIONING IN WOMEN*

BY JAY PERKINS, M. D.

THREE years ago I presented before you some studies on endocrine disturbances with special reference to asthma. In continuing those studies I have endeavored to correlate data obtained as to functional disturbances of the endocrine glands in general and this paper is one of the results.

Much was written a few years ago about the lack of agreement between clinical diagnoses and autopsy diagnoses. The autopsy shows the condition of the organs at death but not the origin of those conditions. Could we have gone back and have determined, in each case reported, the origin the terminal condition would have borne in many cases no recognizable relation to this origin; as an instance, an autopsy showing myocardial degeneration with all of the associated secondary changes told nothing of a chronic hyperthyroidism. Nor would the terminal findings in a patient who had been diagnosed as nephritis but had suffered for years from myxedema have told anything as to the real disease from which he had suffered so far as the pathologist's report showed. We now know these things to be true as to the thyroid and there is no reason to doubt that the same is true of other endocrine glands, only we do not know enough about them and the results of their functioning normally or abnormally to pass judgment. Nor can this knowledge be obtained wholly from the laboratory and experimentation as these means give us only the results of sudden and marked variations while in most of the cases met clinically the conditions are the result of abnormal action extending over many years.

The thing which has impressed me more than almost any other is the fact that making use of the knowledge obtained by laboratory and experimental work so far as different workers can agree, a clinical study is the only one which can give a clear idea as to the character of the changes which take place when there is a long continued moderate abnormality. It is incumbent upon the clinician to return more to the methods of our predecessors in medical study who worked before the day of the modern laboratory.

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*Read before the American Climatological and Clinical Association, May 3, 1924.

For my work on asthma I had the following blank and only recently have asked in regard to bruising, dilated vessels on the thighs, irregular fat deposits, pendant breasts, children and miscarriages; and, as I have not seen some of the patients since I began studying my records, I have sometimes used a question mark as indicating a lack of enquiry not as a question as to a fact.

JAY PERKINS, M.D., Providence, R. I. No.

Name Age Sex
Date Address S. M. W.
Occupation Nativity
Clin. Diagnosis
Ult. Diagnosis
Headache Palpitation Perspiration
Sleep Dreams Heat Cold
Skin Hair Strength Purpura
Menses Bruises Dilated Vessels
Bowels Gas Pigmentation Weight
Gonads Weather Changes
Vaso Motor Tremor
Food and Anaphylaxis
Pulse Temp. B. P. V. C. B. M.
Children Irregular Fat
Miscarriages Pendant Breasts

It is known that the "anterior lobe of the pituitary regulates and controls (a) the skeletal growth and (b) the function and development of the gonads and the secondary sex characters" (Tierney).

There is a different manifestation whether we have a preadolescent or a postadolescent development of the lack of function. The cases here reported are chiefly postadolescent and the skeletal growth is not considered.

Many of the cases present dysfunctioning of more than one gland but they were first treated and improvement obtained by the administration of anterior pituitary (B. W. & Co.).

The things I wish especially to bring out are the relation of spontaneous haemorrhagic spots in the skin, easy bruising, dilated vessels on the thighs, the inability to become pregnant and the proneness to miscarriage to insufficiency of the anterior pituitary gland.

The changes in the blood vessels were brought to my attention by Case 5380—probably a preadolescent case. This patient was very "delicate" as a child, hard to find a proper food, at about 8 months had nystagmus, had measles severely at 8 years and frequent "colds" since then with a laryngismus stridulous cough, and rheumatic fever at 9 years. Since infancy has appeared healthy but never had any endurance. In February 1921, while away at private school, had a "bronchial cold," continued to run a fever and was found to have pulmonary tuberculosis. There was quite an extensive but not intense involvement of the right lung. She had the best of care and while in a few months her temperature and pulse became normal the signs did not diminish and on any exertion and around her menstrual period the temperature would rise slightly. This continued for a number of months. She had irregular fat distribution, a thick and inelastic skin with a moderate protuberance in the upper cervical region, and dilated vessels on the thighs. Believing some endocrine disturbance was back of this history and as the development of the tissues was faulty she was given anterior pituitary and later, in addition to this, Mixed Gland. Improvement immediately started and was continuous until now she is clinically well. The dilated vessels on the thighs disappeared, gradually the skin has become nearly normal and the irregularity of the fat has practically disappeared. This case gave me the suggestion of the relationship between dilated blood vessels on the thigh and insufficiency of the anterior pituitary. Here the phenomenon was present in a young unmarried woman and disappeared under treatment with anterior pituitary.

The association of this phenomenon with easy bruising and spontaneous haemorrhagic spots in the skin may be due to a lack of complete development in the blood vessels. What is here called purpura may be real bruises only the origin of the bruise is unknown. The spots are however frequently in unusual places for bruises and sometimes so intense that a bruise of such severity could hardly pass unnoticed.

The chart shows the association as presented by these cases. Following along the same line profuse menstruation was observed in some of the cases to be quite promptly relieved by anterior pituitary but the chart does not show anything remarkable along this line. There is one case, 3073, in which the ovaries were removed because of profuse flowing. The menstruation was almost continuous. This patient was married in 1888—had two miscarriages (at 2 and 5 months) in the first five years. In 1901 had a full term child (a blue baby) which lived two months. Mother had no milk when baby was born. While pregnant patient felt finely but following confinement flowed so badly with her menses that the ovaries were removed. She has always had bad headaches excepting while pregnant. In January of this year she had several days of considerable physical and nervous strain and one morning, following this, on starting to get up she became unconscious—had involuntary passage of urine and feces, became rigid, foamed at the mouth and bit her tongue. This was followed by another similar but less severe attack a few hours later. She had a similar but mild attack in March 1923 after overtiring. She has much improved under anterior pituitary though unable to take much of it without a sensation as if the floor was coming up to meet her. This case, as others to be mentioned later, seems to show the close relationship between the pituitary and genital glands.

The two following cases had delayed and scant menstruation. Case 7235 showing well marked signs of anterior pituitary deficiency had one child, full term, stillborn and one miscarriage at ten weeks. She also had hair on the upper lip indicating ovarian insufficiency and the basal metabolism indicates lack of thyroid functioning. Her headaches, dreams and other symptoms have much improved under anterior pituitary alone.

Number	Age	Purpura	Bruises	Dilated Vessels	Irregular Fat	Menses	Bowels	Married + Single s	Children	Miscarriage	Breasts Pendant	Perspiration	Dreams	Headache	Strength	Basal Metabolism
245	34	+	++	++	++		—	+	0		+		++	++	—	— 8
497	52		+++	+++	++	+	—	+	0		++	+++	++		—	+ 9
505	32	+	+	++	++		—	+	2		+		?	++	—	+ 3
1161	35			+++	++	—		+	2		?		++		=	+ 6
3073	59		+	+	+	+++	—	+	1*a*	2	+			+	=	— 3
3207	37	+	+	+	+	—		+	2		++		+	++	—	+15
4191	51	+	++	++	+	+	=	+	0	1	+	+	++	+	—	+ 8
4227	46	+	+	++	+	—	=	+	1	2	?		++	+++	—	—11
4561	46	+	+	+	+		=	s	—	—	+			+++	—	+ 1
5380	19	++	++	+	++	+		s	—	—	+	+		+	—	— 7
5546	30	+	+	+	++	+++	—	+	0		+	+++			=	+ 6
*c*5674	39			+++	+	+	=	+	0		+	++	++	++	—	+ 9 +20
*c*5724	37	++	++	+	+	+	—	+	1		+	++	+		=	+ 4
*c*5899	43			+	+	—		s	—	—	+		++	+	—	+ 1
6060	23	+	+	+	+	+		+	0	2	+	+	++	+	—	+ 4
7067	39	+	++	++	++	+		+	1	2	+			++	—	+ 7
7148	48	++	++	++	++	—	—	+	0		+	+	++		—	+ 8
*c*7159	30		++	+	+			+	1	1	+	++	++	+	—	+ 6
7166	43		+	+	?	—		+	0		?			++	=	+ 1
7169	26		+	+	++	+		+	1		+	+		+	=	— 8
7179	37	++	++	+	+++	+	—	+	5		+		++	+	=	— 2
7185	49	++	++	++	+	—	+	+	0	1	+	—	+	+++	=	—11
7198	26	+	+	++	++			+	1		+	+		+	=	+ 2
7203	64	++	++	++	+			+	6			—	+	+	=	+14
7226	52	+	++	++	+	+	—	+	1*b*		+		++		—	—22
7235	37		++	+++	+	—	—	+	1	1	++		++	++	—	—15
7259	55		+	++	+			+	0	1	++			+		+ 8
7309	25	+	++	+	+	+	—	s	—	—	+++		++	++		— 2
7318	34	+	+	+	+	+	+	+	1	1	+	—	++	++	—	— 5
7330	59			++	++			+	0		+		+	++	—	— 9
7440	32	+	+		+		=	+	0		++	—	++	+	=	— 4

a Blue baby lived two (2) months.
b Lived five (5) months.
c Asthma.

Case 245 had delayed, painful and scant menstruation. She had one tube and ovary removed for extra uterine pregnancy at three months with her first pregnancy and within a year the other tube and ovary removed for the same reason. She had other symptoms, especially despondency at times, indicating lack of ovarian functioning but has much improved under anterior pituitary alone.

Case 4227 has always had headaches with menses, now has them every day. Usually wakes with a headache in the morning, very dizzy all the time. Heart beats hard on any excitement and sometimes on thinking. Distressed by food very frequently. She always has distress in stomach before menses. With headaches always has distress in stomach and much vomiting. Cries a good deal. Does not want to go anywhere nor have anyone come to see her. Feels sleepy and "dopey" a good deal but does not sleep well nights. Had a miscarriage when married one year and another in 1916 at two months. At the time of her second miscarriage she was visiting in New York and the physician (an excellent obstetrician) could find no cause for the miscarriage excepting that the formation of the uterus was such that she could not carry a child. In 1919 she became pregnant again and carried the child to full term. While pregnant and for a few months afterwards she felt perfectly well for the only period of any length during her life. "While pregnant she had no headaches, no nausea, was not nervous, danced and had a normal life in every way." Under anterior pituitary her headaches disappeared and when Thyro-Varium was added she became a normal woman. She has menstruated only twice during the past year—October 8, 1923, and January 24, 1924.

As concerns the chart we have now considered purpura, dilated blood vessels, menstruation and child bearing. Pendant breasts were included because I was so much impressed by Case 7309, a young, single woman who had this condition extremely marked. This sign is not limited to cases with recognized anterior pituitary deficiency and only suggests this as one of the factors involved. Irregular distribution of fat, headache and loss of strength are well recognized signs of this disturbance. The bowels are usually constipated but nothing remarkable, probably due to the general condition and is an associated symptom. Increased perspiration surprised me by its frequency. Dreams and especially "terror" or "fright" dreams are very common and with headaches are among the first symptoms to disappear under treatment.

There are two other symptoms which I have noted but not placed on the chart because of their infrequency in these mild cases, namely the mental and eye symptoms. The mental retardation of preadolescent cases and the mental apathy of all well marked cases is well known. One case of this series presented a mental condition relieved by pituitary extract, whether due to lack of this or not, which deserves some attention. Case 7169, female, age 26 years, married, first seen September 11, 1923, gave a history as follows: had granulated lids since 10 years of age and of late the lids are ulcerating. Used to have hay fever start with the roses in June and continue until frost came but for 6 or 7 years has had very little until this year she is having a mild attack. Gums used to bleed easily but not so much of late. One tooth came loose suddenly recently. Eggs as eggs disturb stomach but she can eat them in custard. Faints easily. Had an infected wound of finger April 1922 and following this had mastoiditis. Was pregnant at the time but went through the pregnancy all right and child was born August 19, 1922. She had plenty of milk but it did not nourish the baby which was weaned at three months. In December she began to lose ambition, tired easily, was nervous, had headaches. At time of examination she was sleeping very poorly—waking easily, very nervous and irritable since the first of March. She has "gastric attacks" consisting of pain in left side relieved by passing gas. Has a tendency to be deceitful, is mentally rather stupid and sometimes slovenly about her hair and clothes. Could no longer make a home and ceased to care for child. Has been under severe osteopathic treatments and was apparently made worse by them. It was hard to get a clear and connected history from her and history was obtained chiefly from others. Examination: Face drawn and expressionless, appearance slovenly, has an expression as of sneering. Pulse 80, B. P. 120/70, Urine negative, Vital Capacity 3.2, estimated 3.6, B. M. —8%, heart and lungs negative, fat unevenly distributed, vessels on thighs dilated, breasts pendant, subcutaneous tissue thick and inelastic, skin hubbly when pressed laterally. Under anterior pituitary extract reinforced by mixed gland and thyrovarium she is returned to nearly normal and again making a home and caring for her child.

Another case of special note is 4561, a teacher, 46 years of age. She always had headaches which were first ascribed to "stomach" and then to "eyes." When 13 years of age she was taken to eye specialists because of headaches and was told that her trouble was from astigmatism. Glasses enabled her to read better but gave no relief to headaches. When about 18 years of age she went to another oculist who said she had most peculiar eyes, that they did not focus alike. Glasses have been changed a numberof times but never any relief to headaches which have grown worse to the present time. Has had a great many attacks of bronchitis and at one time a post influenzal condition was diagnosed as tuberculosis. Before treatment, eating chocolate would bring on attacks of coughing and wheezing. Having "bilious attacks" with nausea and headeaches two or three times a week. Had alopecia areata in 1900, 1905, 1913 and 1921. Menses every 3 weeks since 13 years of age until influenza in 1918 and since then less regular. Eating fish gives urticaria. Examination:—P. 64, T. 97.2, R. 20, B. P. 118/80, B. M.+1%, Urine negative, fat irregularly distributed, breasts pendant, blood vessels on thighs dilated, slight bronzing of skin. She obtained the greatest relief from anterior pituitary gland and has been well all of the present school year excepting for one infection of the throat and is remaining well and strong on two tablets of anterior pituitary and two of suprarenal per day.

Other cases have come under observation demonstrating the inability of oculists to fix glasses to those suffering from deficiency of the anterior pituitary. One case having this trouble, also suffered from dizziness and staggering when walking on the street, was much relieved by administering this gland.

Knowledge as to the functioning of the endocrine glands is very indefinite and confusing. As seen, the cases have as a rule developed dysfunctioning very gradually and when recognized many secondary changes have taken place. The complaints of the patients frequently, while primarily due to endocrine dysfunctioning, are the same as are produced by other causes, as the headaches are no different from those which are from the eye defects.

As regards the other headings on the record blank nothing was noted of sufficient uniformity to be recognized as of value in reference to the pituitary gland. The pulse and blood pressure varied according to associated conditions apparently not being affected by the pituitary excepting as a part of the general condition. In uncomplicated cases of anterior pituitary deficiency there is a tendency to slow pulse. The anterior pituitary does not raise the blood pressure normally nor in ordinary doses. In some cases of high blood pressure there is a drop under treatment with anterior pituitary gland probably by stabilizing other functions.

The literature of the past few years shows that much advance is being made in study of the endocrines partly through experimental work, partly by clinical study. The conditions produced by years of gradually diminishing functioning can hardly be produced in the laboratory. Only by following histories over a long period and, when the primary cause does become apparent, observing what is in common with similar cases, can the whole picture be obtained. In this paper the special observations submitted are the changes in the skin, the tendency to sterility or miscarriage, disturbances of menstruation, headaches, dreams and incidentally difficulties of vision in those suffering from deficient functioning of the anterior pituitary body.

◆

VISUAL FIELDS IN PITUITARY DISEASE—A CASE REPORT SHOWING THE INFLUENCE OF ENDOCRINE THERAPY

(From The Evans Memorial, W. D. Rowland, F. A. C. S.)

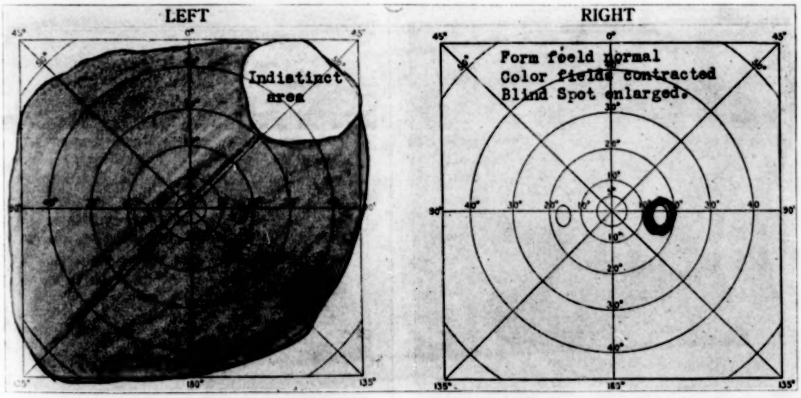
This is a young female in which the ophthalmological, neurological, and general clinical history all indicated a probable pituitary lesion. Research study was carried out to verify the diagnosis and to determine more accurately the nature of the lesion, since it apparently was an advanced process. It was concluded that hypertrophy of the posterior lobe existed with increased activity, and this overgrowth, probably through pressure atrophy, induced anterior lobe deficiency.

Miss H., aet. 25, single, employed as stenographer. July 28, 1923.

Date—July 30-31, 1923.

With glass.
Dist. Vis. R—10/12 Near Vis. R—J 2.
Dist. Vis. L—f. 1 ft. Near Vis. L—Nil ?.
R—Pupillary Reaction to Light—normal.
L—Pupillary Reaction to Light—negative.
Rotations—normal.
Media—R—clear.
L—clear.
Fundus R—2-3 diopters of papilledema (choaked disc).
Fundus L—small superficial hemorrhage nasal side of disc.

Rt. Pupil, Size—4 mm. Shape—Round.
Lt. Pupil, Size—4 mm. Shape— "
Consensual—negative. Accom. Conv.—normal.
Consensual—normal. Accom. Conv.—slight.
Convergence—normal.
Disc not elevated but yellowish in color.



5 mm. object at 16.5 cm. daylight. 5 mm. object at 16.5 cm. daylight.

Interpretation—Right enlarged blindspot, contracted color fields; left field almost lost; right choaked disc; left yellow disc—indicates a lesion in the left optic tract at or in front of the chiasm; intracranial hypertension.

Chief Complaint—Nervousness, mental depression, general weakness, partial blindness of left eye, with pain deep in the left temporal region, left orbit and extending to the ear of the same side.

History—Severe headaches for four years, which she attributed to over-work and religious worry. These attacks seemed to come periodically, but not severe enough to interfere with her duties as stenographer. The present illness, of more severe exhibition, began about three months ago and characterized by general weakness, irritability, severe pain between the eyes, nausea and vomiting, and finally unconsciousness following a very severe pain in the occiput when the head was thrown back in the act of mouth washing. She recovered from this state within a few hours, but continued with severe head pains, more marked on the right, for three days, at the end of which she was taken to a hospital in Boston, where she remained nine weeks. During this hospitalization there was no nausea or vomiting, but a convulsion after which she slept three days; also much irritability, photophobia, moody disposition and much crying.

Familial history shows tuberculosis in both parents, and the patient has had cough with sputum. The menses were established at the age of 16 and four years ago became irregular, ceasing altogether in April 1923.

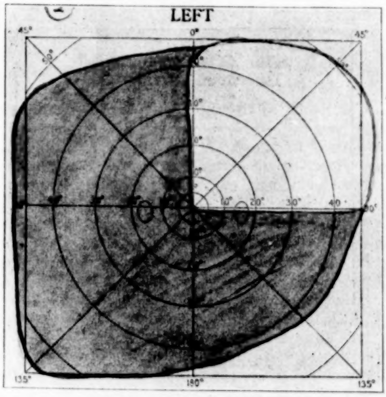
Physical Examination (Only related positive findings given here).

Chest and lungs—Slight supra- and infraclavicular and intercostal recessions. Expansion equal on both sides. Dullness in left apex. Breath sounds increased on right below lower border of scapula. Fine rales heard over same region. No areas of dullness. Both lungs have increased resonance, and slightly decreased fremitus.

X-Ray—Sella negative?

Ophthalmological Charts—

August 25, 1923.
Fundus R—No elevation of disc.
Fundus L—No hemorrhage; temporal pallor of disc.
V. R. 10/12. Near V. J 2.
V. L. 5/200. Near V. J 7.

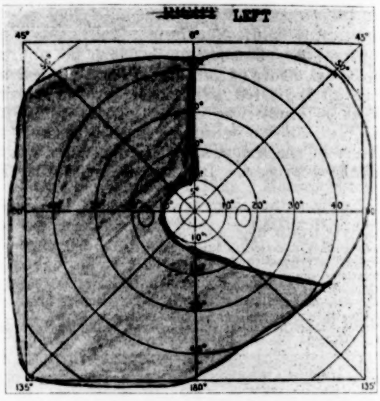


5 mm. object at 16.5 cm. daylight.

Laboratory Findings—Comparison of data.

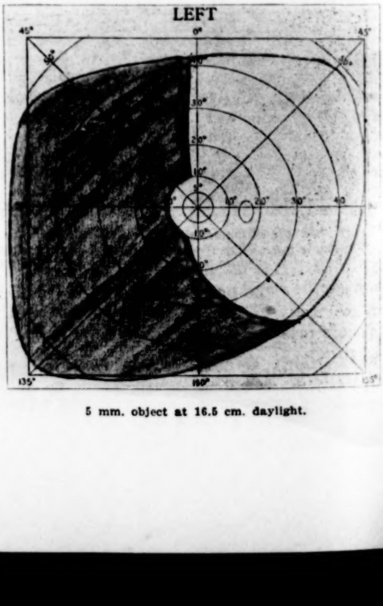
	August, 1923	March, 1924
Routine Examination of the Urine:		
Volume	1770 c.c.	1400 c.c.
Specific gravity	1.010	1.012
Albumin	Positive	Positive
Sugar	Negative	Positive
Casts	Positive	Negative
Calcium oxalate crystals	Positive	Negative
Nitrogen Partition:		
Total nitrogen	4.62 grams	6.28 grams
Residual nitrogen	3.1%	13.8%
Phenol Sulphone Phthalein:		
1st hour	27%	27%
2nd hour	20%	22%
Total	47%	49%

September 8, 1923.
Fundi same.
V. R. 10/12.
V. L. 5/40.



5 mm. object at 16.5 cm. daylight.

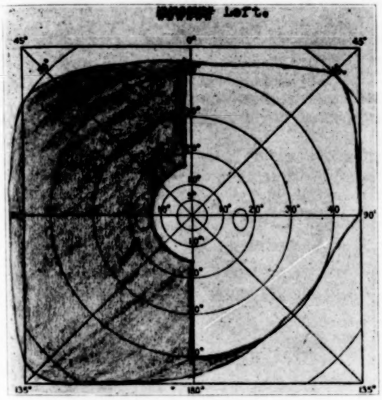
October 10, 1923.
Fundus R—Disc is tallow yellow, lamina showing center 1/5.
Fundus L—Disc is tallow yellow, lamina showing center 1/3.
V. R. = 10/10.
V. L. = 5/30.



5 mm. object at 16.5 cm. daylight.

Urea Curve:		
Control	1.0 grams	1.1 grams
1st period	2.4 "	1.4 "
2nd period	2.9 "	1.4 "
3rd period	2.5 "	1.8 "
Amylase:	4	3
Urobilinogen:	Negative	Negative
Salol:	100 min.	60 min.
Adrenalin:	Negative	Negative
Alveolar Carbon Dioxide:	32 mm.	26 mm.
Galactose Tolerance:		
Positive	10 grams	Continuous
Negative	5 "	Mellituria

December 13, 1923.
Fundi same as last observation.
V. R. = 10/10. Near V. = J 1.
V. L. = 10/40. Near V = J 2.



5 mm. object at 16.5 cm. daylight.

Blood Chemistry:		
Non-protein nitrogen	35 mmg.	42 mmg.
Urea nitrogen	26 "	23 "
Uric acid	3.3 "	3.6 "
Creatinin	1.6 "	1.6 "
Sugar	76 "	84 "

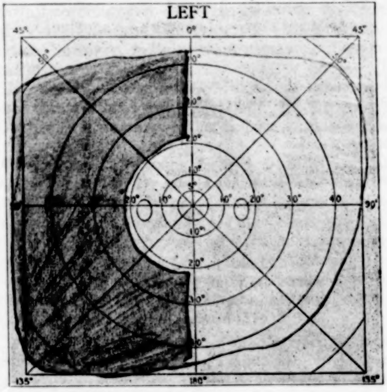
Blood Morphology:	
Haemoglobin	80%
Erythrocytes	4,210,000
Leucocytes	5,950
Lymphocytes	45%
Eosinophiles	5%

Vital Capacity:				
Weight	37.7	—30%	41.2	—23%
Chest	59.0	—19%	61.5	—16%
Vital Capacity:				
Dreyer	2100	—22%	2000	—27%
West		—28%		—32%
Basal Metabolism:				
Observed	906	—25%	1332	+10%
Standard	1187		1223	
Blood pressure	116/80		115/83	
Pulse	64		78	
Respiration	18		16	
Temperature	98.4		98.6	

ANALYSIS OF LABORATORY FINDINGS

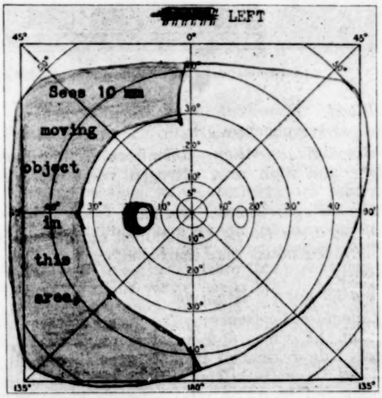
Routine Examination of the Urine: Several examinations show a somewhat increased volume with a fair elimination. The balance of the several constituents is likewise fair. Albumin in small amount was observed with some regularity. No other abnormalities were found in solution.

January 19, 1924
V. R. 10/10. Near V. J 1.
V. L. 10/12. Near V. J 1.



5 mm. object at 16.5 cm. daylight.

March 26, 1924.
V. R. 10/8. Near V. J 1.
V. L. 10/12. Near V. J 1.



5 mm. object at 16.5 cm. daylight.

Calcium oxalate crystals were uniformly observed in the sediment.

Nitrogen Partition: With a very low nitrogen elimination corresponding to less than a maintenance protein nitrogen the balance of the several constituents was of the order to be expected with complete normalcy.

Phenol Sulphone Phthalein: Concordant determinations show a definitely depressed elimination of the dye.

Urea Curve: A substantially normal curve.

Amylase: Greatly diminished.

Urobilinogen: Negative.

Salol: Slightly delayed.

Adrenalin Test—(Loewi's) Negative.

Blood Examination — Morphological: A marked lymphocytosis with 5% eosinophilia.

Blood Examination—Chemical: A low blood sugar and high urea nitrogen value were remarked.

Blood Sugar Curve: Normal.

Blood Urea Curve: Sustained normal shape. It is to be noted that the blood urea was high initially.

Wassermann: Negative.

Galactose Tolerance: The patient was positive on 10 grams and negative on 5 grams, a marked depression of the tolerance threshold.

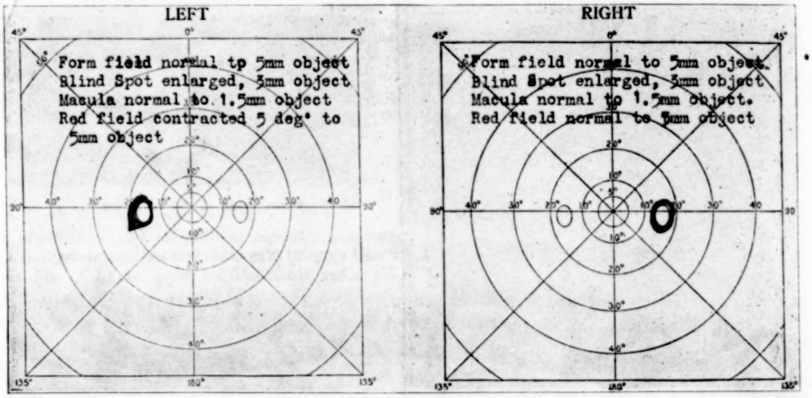
Vital Capacity: The patient is 30% underweight and shows a vital capacity about 25% below the calculated normal.

Basal Metabolism: The metabolic rate, as observed, is 25% below the normal level. With this is a slow pulse, normal temperature, practically normal blood pressure.

Date—May 3, 1924.

With glass.
Dist. Vis. R—10/10. **Near Vis. R—J 1.**
Dist. Vis. L—10/12. **Near Vis. L—J 1.**
R—Pupillary Reaction to Light—normal.
L—Pupillary Reaction to Light—normal.
Rotations—normal.
Media—R—clear.
L—clear.
Fundus R—disc yellow tallow color.
Fundus L—disc yellow tallow color.

Rt. Pupil, Size—5.5 mm. **Shape—round.**
Lt. Pupil, Size—5.5 mm. **Shape— "**
Consensual—normal. **Accom. Conv.—normal.**
Consensual—normal. **Accom. Conv.—normal.**
Convergence—normal.



Form field normal to 5mm object
Blind Spot enlarged, 5mm object
Macula normal to 1.5mm object
Red field contracted 5 deg° to 5mm object

Form field normal to 5mm object.
Blind Spot enlarged, 5mm object
Macula normal to 1.5mm object.
Red field normal to 5mm object

Interpretation—Left field practically normal now. Has been assisting at typing in laboratory.

EARLY CONCLUSION AND SUMMARY

These findings amplify and supported by X-Ray, neuro-otological, neurological, ophthalmological, and certain other special examinations warranted the conclusion that a state of pituitary dysfunction existed with lowered activity of the anterior and hyperactivity of the posterior lobe with a probable hypertrophy of the latter. In addition there were indications of a kidney pathology and a possibility of pulmonary tuberculosis.

A repetition of the study some seven months later shows the following:

Routine Examination of the Urine: No substantial change is observed here although the balance is somewhat improved. Albumin persists but no casts were observed. The patient is at a somewhat low nutritional level.

Nitrogen Partition: The normal partition of the earlier test has given place to a definitely high residual nitrogen as shown by two wholly concordant measurements. Creatinin elimination is improved somewhat.

Phenol Sulphone Phthalein: Values substantially identical with the earlier test. There is a definitely depressed elimination.

Urea Curve: Shows depressed elimination. This is not as good as the earlier measurement.

Amylase: The same abnormal low values are here observed as were shown in the earlier examination.

Urobilinogen: Negative as before.

Salol: Normal. Improved.

Blood Examination—Chemical: A slightly higher non-protein nitrogen and uric acid, a slightly lower urea nitrogen, the same creatinin level, and a slightly higher blood sugar. There is evidence of some slight retention in both tests. The present would be expected to be somewhat higher as the patient was on a more liberal nitrogen diet.

Wassermann: Negative.

Galactose Tolerance: This shows no improvement, the patient now being positive on 5 grams where earlier it required 10 grams to elicit a melituria.

Vital Capacity: The patient while still markedly underweight has gained 3.7 kilograms, an increase of 10%. The chest measure is also larger. The vital capacity shows no substantial change.

Alveolar Carbon Dioxide: The values observed are much below the normal and are less than at the earlier test. The writer is inclined to question these values.

Basal Metabolism: Here is shown a striking improvement. The patient has gained 35% and is now normal. The pulse rate, temperature and blood pressure are all substantially so.

FINAL CONCLUSION AND SUMMARY

Certain of the tests of the first series were omitted. They are now known to be of little value. In addition a number of special tests were carried out analagous to those of the first series.

The lowering of the alveolar carbon dioxide and the practical disappearance of any tolerance threshold warrants the conclusion that a gonad influence secondary to the pituitary dysfunction is manifesting itself. This is hardly to be wondered at. The kidney condition is substantially unchanged although possibly a slight improvement might be connoted. Such an inference, however, rests upon a somewhat unsubstantial foundation.

Diagnosis: Pituitary Dysfunction—Posterior Lobe Overaction, Anterior Lobe Underaction; probable Pulmonary Tuberculosis, possible Nephritis.

Treatment: Anterior Lobe pituitary extract intermittently by Dr. C. H. Lawrence.

Progress: This is graphically shown by the eye findings. Likewise there has been less frequent and briefer periods of mental depression, less general nervousness, less fatigueability; progress in all respects toward normal except in galactose tolerance. (A pulmonary haemorrhage occurred May 30, June 2, 4, 5.)

I desire to express my appreciation to Drs. Thomas E. Chandler, Harold Babcock, N. H. Garrick, C. H. Lawrence, to the laboratory staff of the Evans Memorial, and to Allan W. Rowe, Ph.D., Chief of Research, for their coöperation in making this report possible.

220 Clarendon Street,
Boston, Mass.
May 31, 1924.

MERCUROCHROME—220 SOLUBLE INTRAVENOUSLY. CASE REPORTS

BY DONALD S. ADAMS, M. D.

[From the Medical and Surgical Services of Memorial Hospital, Worcester, Mass.]

UNLESS those who are using Mercurochrome-220 intravenously report their successes and failures we cannot estimate its true worth. In this way only may the indications and contraindications be realized. Young and Hill[1] and recently Whitman[2] have given us an insight into its value.

The following are five cases in which Mercurochrome-220 was used with varying results.

Case 1: G. E. H., female, age 16, single. Hosp. no. 1598.

History of seven months miscarriage two years ago. Neisser infection September, 1923, for which she had local treatment. Subsequent salpingitis which responded to conservative treatment. Present illness began ~~the last week~~ in March, 1924, when patient had a two months miscarriage which she claimed was spontaneous and complete. She developed however, a pelvic cellulitis and on admission, April 17, presented evidence of acute salpingitis and low grade peritonitis. A mass in the right vault was punctured without obtaining pus. Her condition gradually became worse, temperature ranging from 99 to 103 F.; pulse from 100 to 140. One week after admission a second pelvic puncture was done and this time a large abscess cavity was drained. No growth from this pus at end of three days. Her white count which had been 10,000 on admission and had reached a maximum of 64,000 on April 21, dropped to 36,000 after second operation. The drainage was beneficial for four days when her temperature and pulse began to rise. The abdomen became quite tense and severe pain was noted over entire abdomen and right chest. Multiple skin emboli in the form of small furuncles appeared over her back and limbs. These showed Staphylococcus by smear. Three blood cultures had been taken up to this time. The first, taken soon after admission, showed no growth; in the second appeared a Gram negative coccus considered by Pathologist as Gonococcus. The third culture showed a mucoid Staphylococcus. On nineteenth day after admission her condition had reached a moribund stage. A massive right lobar pneumonia existed and the abdomen was distended and rigid. She was delirious and cyanotic, with temperature 102.2, pulse 160, respirations 44. At this point, having failed to overcome process by operation and conservative means I introduced, as a last resort, 30 c.c. of 1% mercurochrome-220 into vein of elbow without noticeable reaction. Twelve hours later, temperature 99 F., pulse 128, respirations 30. Uneventful recovery followed. Chest condition cleared up within two days, furuncles rapidly dried up and only temperature reactions noted thereafter were when patient began getting up and walking. At present time, 6 months after discharge, patient is entirely well.

Case 2: J. E. R., male, age 52, single. Hosp no. 3438.

Admitted September 28, 1923, on Orthopedic service of Dr. Ayres, with fracture of first lumbar vertebra, lower Sacrum and Coccyx. He had cord injury as evidenced by paralysis below level of injury, and the usual urinary retention. Received conservative treatment. Gradual improvement noted until April 8, 1924, when he began running a septic temperature, the cause of which was not definitely located until April 30, when a reddened area to the left of anus was incised and a large pocket of pus evacuated. Culture showed Streptococcus. The process rapidly invaded buttocks and perineum, extending to inguinal lymph nodes. Multiple incisions were made without controlling sepsis. Blood showing no growth, and with the hope of raising patient's general resistance, 500 cc. of fresh blood was given. Slight general improvement noted, but suppuration continued. Pulse and temperature continued to rise and on night of May 8, patient had a severe chill. Having failed with fresh blood, 50 cc. of Mercurochrome-220 1% was given intravenously without reaction. Toxic symptoms subsided, perineal and abdominal wall sinuses closed and large sloughing wounds of buttocks and anal region cleaned up and began to heal for the first time.

Case 3: M. M. F., female, age 26, married Hosp. no. 1833.

Admitted May 6, 1924, with history of having had acute rheumatic fever the last of February, 1924. Examination showed a very ill woman apparently toxic from one or more foci whose location we never found. During her ten day stay in the hospital her temperature ranged from 99 to 103 F., pulse from 60 to 140, white count from 7000 to 18,000. Electrocardiographic tracing, typical of a heart coping with sepsis. Widal and blood culture negative. On tenth day as a last resort, 40 cc. of 1% Mercurochrome-220 was given intravenously with no apparent reaction. No effect obtained, patient died six hours later. No autopsy permission.

Case 4: M. H., female, age 11 years. Hosp no. 1841.

Admitted on Medical service of Dr. Stansfield, May 7, 1924. Temperature 103.5 F., pulse 95, respirations 20, white count 25,400. Diagnosis of meningitis made. Culture of spinal fluid showed Pneumococcus. This case received local treatment in the spinal canal with .5% Mercurochrome-220 and intravenously 20 cc. of a 1% solution. No reaction. Neither local nor general results obtained. Patient expired two days later. No autopsy permission.

Case 5. J. G. K., female, age 42, married. Hosp, no. 1926.

Admitted on Medical service, May 14, 1924. Chief complaint was weakness and fever. She had been ill for 6 months. The working diagnosis was acute mitral endocarditis. She presented a severe secondary anemia. Temperature ranged from 97 to 101.5 F.; pulse from 80 to 120, respiration 28 to 40. Blood culture negative. Forty cc. of Mercurochrome-220, 1% was given by vein, with the hope of stopping her rapid down hill course. One hour after administration a slight chill was noted. Following morning temperature rose to 101.2 F. but rapidly fell to subnormal. No change in pulse. There was a generalized very slight pinking of the entire body, accentuated by her extreme pallor. A severe diarrhea also noted. Patient had evidently had an over dose. She expired a week later and an autopsy was obtained.

Comments:

Case 1: It is fair to give the credit of this recovery to the intravenous therapy. The effect was decidedly rapid and obvious. The reaction commonly seen following the administration was lacking. Organisms affected: Gonococcus and Staphylococcus.

Case 2: Beneficial local results obtained. No reaction. Organism affected: Streptococcus.

Case 3: Although carefully worked up and studied, no diagnosis was attained. Mercurochrome-220 was given as a last resort. It was contraindicated under the circumstances. No apparent reaction.

Case 4: Intraspinal and intravenous application of Mercurochrome-220 in an effort to overcome the effect of an advanced Pneumococcic process. Possibly, results could be obtained at an earlier stage of the disease. No reaction.

Case 5: Here again, as in Case 3, its use in the hopes of obtaining results where other means had failed. Autopsy findings showed that nothing would have availed, for a generalized lymphatic new growth was discovered. The latter condition will probably be reported by Dr. Stansfield when a diagnosis has been reached.

As was mentioned in the case report this patient had a temperature reaction and a subsequent intractible diarrhea. The autopsy failed to disclose any mercurial effects on either the kidneys or mucosa of the intestinal tract.

Conclusions: From this small group of cases it is fair to conclude that:

(1) At the dosage, 6 mg. per kilogram of body weight Mercurochrome-220, 1% may be given safely and yet obtain results.

(2) It has specific action on the Gonococcus and the Staphylococcus in the blood stream.

(3) Local effects on lesions due to Streptococcus but not to those affected by Pneumococcus.

(4) When used empirically, many disappointments are to be expected, as in cases 3 and 5. The presence of a certain focus or a positive blood stream invasion will warrant its trial, where other means have not produced other results.

MEDICAL PROGRESS

PROGRESS IN DERMATOLOGY

BY HARVEY P. TOWLE, M. D.

For several years the medical profession was so occupied with the manifestations of *Allergy* that it quite neglected the more practical side of the question, the treatment. Now however that lack is being remedied. During the year several articles have appeared dealing with the management of Allergy among which are deserving of mention one by Duke (The Treatment of Hay Fever, Asthma and Other Manifestations of Allergy, Am. Jour. Med. Sci. Nov. 1923, p. 645), one by Schiff (Non-specific versus Specific Therapy in Bronchial Asthma, Am. Jour. Med. Sci., Nov. 1923, p. 664) and one by Vallery-Radot (Desensitization by Cutaneous Reaction, Bull. de la Soc. Med. des Hop, March 23, 1923, p. 460). These articles are types showing which way therapeutic progress is tending.

Duke asserts that the numerous manifestations of allergy such as asthma, the dermatoses, urticaria, angio-neurotic edema and the like, can be treated along five different lines, namely, avoidance or removal of the specific cause of illness, or of contributory causes, specific protein treatment, non-specific protein treatment, and symptomatic treatment.

Avoidance or removal of the specific cause is the method of choice when this method can be used.

Specific protein treatment is the choice when the cause is known but cannot conveniently be removed.

Non-specific treatment is worth a trial when the cause of illness is not known or cannot be removed or treated specifically. This method, according to Duke, can best be carried out by the subcutaneous injection of colon bacilli or by the administration of small doses intravenously.

Symptomatically, one can give epinephrin, pituitary extract or atropin for temporary relief.

Whereas Duke advises injections of colon bacilli in the non-specific treatment of allergic manifestations, Schiff advises milk because of its ready supply and ease of administration. Believing that a non-specific element plays a large part in the benefits derived from specific desensitization, Schiff also believes that non-specific proteins should be used almost as a routine measure.

Like Duke and Schiff, Vallery-Radot discusses the treatment of allergy by desensitization but approaches the subject from a slightly different point of view. Vallery-Radot asserts that it is possible to desensitize anaphylactic patients to the substances to which they react by means of cutaneous inoculation, performed as for the so-called food tests. He applies minute quantities of antigen almost daily. He reports the case of a man sensitized to horse hair who was desensitized in two months by daily cutaneous reactions.

Traband and Carpentier (ibid. p. 466) report the case of a boy, who, sensitized to wool, was apparently cured by repeated cutaneous applications of wool applied to a scarified place on each deltoid region. In two months he could sleep and work on wool without reaction.

In this connection it is interesting to note that Ravault (Presse Med. May 26, 1923, p. 473) goes so far as to declare that such cases of Hypersensitization as those just mentioned are built upon a ground work of inherited syphilis too weak to be detected by the serum reaction. Unless mild and prolonged mercurial and arsphenamin therapy is administered, Ravault asserts, any desensitization obtained will be but temporary.

We have just considered desensitization as a method of treatment in allergic manifestations. Strickler some two or three years ago advocated desensitization as a method of treatment in *Ivy Poisoning* and manufactured an antigen and a tincture from the Rhus Toxicodendron to be used for that purpose. Strickler's reports were so enthusiastic that many were stimulated to investigate. In this they were undoubtedly spurred on by the reputation which desensitization had obtained in other directions. It speedily became evident that Strickler's method would accomplish cure in many instances leaving for present study its advantages and disadvantages over the older methods.

Bivings has tried out the desensitization method in a series of 105 cases, all of which were in an institution where the treatment could be carefully regulated and the cases watched closely. He reports (Successful Desensitization and Treatment of Poison Ivy and Poison Oak Poisoning, Arch. Derm. and Syph. May, 1924, p. 602) that all but two cases responded with varying degrees of success. About 50% of the patients received from two to five injections and "obtained relief" in from 36 to 72 hours. Just what constitutes "relief" Dr. Bivings does not say.

In treatment the doses were given once daily, the antigen hypodermically, in doses of from 15 to 30 mimims. The dose varied with the intensity of the case. The frequency of the administration also varied. The average interval was twenty-four hours and the average dose, as stated. In severe cases the dose was increased to the limits given and the frequency to every eight hours.

He reports that the average length of time for relief was thirty-six hours.

So greatly have some men, not dermatologists, been impressed by the discovery of allergy that they have gone so far as to maintain in so many words that *Eczema*, all cases and all kinds, is always a manifestation of allergy. Among other evidence, the studies of Schamberg and Brown (Arch. Int. Med. Aug. 1923, p. 203) on the "Relationship of an Excess of Uric Acid in the Blood to Eczema" should induce them to modify their claims.

Schamberg and Brown determined the Uric Acid content of the blood from more than 200 patients suffering from various cutaneous diseases of which by far the largest number were cases of Eczema. More than 50% of the cases of eczema revealed a uric acid content above the maximal normal whereas in cases other than eczema this was not true. The greatest incidence occurred in patients between 40 and 70 years of age. Children as a rule showed no marked increase in the uric acid content of their bloods although there were some striking exceptions.

Bromide Poisoning. Bromo-Seltzer has so considerable a vogue among the laity as a cure for headache that it may fairly be called a household remedy. It is a common occurrence for a headache sufferer to keep a bottle in the house. Moreover it may be purchased over the counter at any soda fountain. Accurate dosage is unknown in either case. It is to be remarked too that it is a habit forming remedy as the case reported by Waugh illustrates (J. A. M. A., May 17, 1924, p. 1584). Waugh's patient was a man, aged 40, who began to take Bromo-Seltzer two years before for headache. Owing to the sedative effect of the remedy he took it regularly and, as the habit is, in constantly increasing dosage. One half ounce was his usual single dose which he took several times a day. Once he even took a whole bottle in the course of the day. Within a few weeks after beginning to take the drug, the man developed a papulo-pustular, acneiform eruption over the face, arms, chest and legs which persisted and grew worse. Many lesions broke down and became covered with sero-purulent crusts, after a time healing with scars. In certain areas the lesions were so numerous as to become practically confluent and, as on the legs, covered large areas. In addition to the eruption, the patient presented a bluish, cyanotic pallor characteristic of acetanelid intoxication. Most interesting is Waugh's account of the composition of Bromo-Seltzer and his figures as to the amount of the different ingredients contained in the average dose as taken by patients at home or as dispensed over the soda fountain counter. According to the analysis made by the Chemical Laboratory of the American Medical Association, Waugh says, Bromo-Seltzer contains per 100 parts—potassium bromide, 10.53 parts; acetanelid, 4.58 parts; caffein, 1.20. On the basis of the analysis given, one half ounce, which is about the average dose as the remedy is taken and given by the laity, the user would receive 24 grains of bromide, more than 10 grains of acetanelid, and about 3 grains of caffein. This is a fairly stiff dose for anybody and, if multiplied two or three or more times a day, is actually dangerous. Waugh states that, according to his patient, Bromo-Seltzer is used by opium addicts as a substitute to still the craving for opium.

The bacteriology and the etiology of *Herpes Febrilis* and *Herpes Zoster*, on the one hand, and the relationship of the group to Varicella, on the other hand, continue to excite interest both here and in Europe.

Goodpasture and Teague have done a great amount of very careful experimentation with the virus of herpes febrilis and herpes zoster. In an article on the Virus of Herpes Febrilis (J. Med. Research, Dec., 1923, p. 139) they report their conclusion that cell injury is a necessary preliminary to local infection. Local infection must occur first that sufficient virus may be generated, otherwise it will not spread. When spread takes place it is along the nerves to the central nervous system. Transmission may be along the sensory, motor or sympathetic fibres, depending upon the character of the nerve supply running to the inoculated area. It is their belief that transmission is along the axis cylinders rather than by way of the perineural spaces and that it is not by passive transportation but by a proliferative invasion.

Recently, they have reported (Experimental Herpes Zoster, Jour. Med. Research, Dec. 1923,

p. 185) the results of their experiments done with a virus derived from the vesicles of a herpes simplex occurring in a patient with pneumonia.

Their conclusions are that the herpes virus first multiples at the site of inoculation in the skin and then passes up the corresponding spinal nerve to its spinal ganglion. The virus then seems to pass centrifugally along the nerve and its branches to the skin where it multiplies rapidly and gives rise to the characteristic herpetic vesicles.

Another possibility, the writers say, is that the virus may travel from the site of inoculation to the main nerve trunk and then centrifugally along the other branches of the nerve without first reaching and multiplying in the spinal ganglion.

Teague and Goodpasture succeeded in inoculating guinea pigs by first irritating the skin of the belly by means of coal tar applied two or three times. In 72 hours there was an ulceration at the site of the inoculation. Within another 24 hours there was a zonal eruption of vesicles which at first spread ventrally from the site of inoculation, later dorsally. Never did the eruption spread beyond the middle line.

They express the opinion, derived from their experiments, that zoster in man is produced by a virus which differs only in virulence from that of Herpes Simplex or by a virus which is very closely related to that of Herpes Simplex.

Netter and Urbain (Comp. Rend. de Soc. de Biol. Feb. 29, 1924, p. 46) investigated the nature of the *Zoster* virus from the point of view of *Deviation of Complement*. They report that the crusts and the serum of zoster patients always show a deviation of complement to the antigen of zoster and of varicella as well. Contrary to the experience of Teague and Goodpasture, Netter and Urbain could demonstrate no relationship between the virus of zoster and the virus of herpes febrilis, using the deviation of the complement as a test. They could produce no deviation of complement in the two serums.

The discussion as to the relationship of *zoster* to *varicella* has already been alluded to. Netter and Urbain found that all zoster sera reacted positively to the sera of varicella. Covering this point they give corroborative evidence in the form of clinical reports. They observed one case of zoster which was accompanied, after four days, by an eruption of varicella. Two cases of zoster had so abundant aberrant elements as to suggest varicella. Three of their cases of zoster followed exposure to varicella. They saw varicella develop in a child thirteen days after exposure to zoster in the mother. A student developed varicella sixteen days after exposure to zoster and a husband developed varicella fourteen days after the onset of zoster in his wife. They close their report by saying that in every case of zoster the close relationship with or at least the close imitation of varicella has been evident.

Bloedorn and Roberts (J. A. M. A. Feb. 23, 1924, p. 622) give further clinic evidence of a virus in zoster and of the manner in which it spreads. They report one of the rarer complications, motor paralysis. It is believed that ordinarily, they write, that zoster affects only the sensory roots. Bloedorn and Roberts point out that the close anatomic relationship between the spinal ganglion and the motor fibres in the main nerve trunk would lead one to expect frequent involvement of the motor fibres and consequent paralysis. As a matter of record however such involvement is rare.

They report a case of paralysis coming on two days after the appearance of the herpetic eruption in a man of 68. A marked bulge developed in the left lumbar region in the anterior axillary line which extended from the level of the crest of the ileum to the level of the umbilicus. When standing, the protusion was most noticeable. No mass could be determined on palpation but the muscles over the region were markedly flaccid. The tumor slowly disappeared although it was still demonstrable in small degree five months later.

During the Great War *Scabies* was a real plague and various methods were devised and tried to get rid of the disease in the quickest possible manner. One of the most efficient was the French method which released the soldier back to the line in twenty-four hours. The treatment however was so rough that it could hardly be used in civil life where only self-discipline prevails. The so-called Danish treatment, recently reported upon by Greenwood (J. A. M. A. Feb. 9, 1924, p. 466), does not have that objection. Like the French, the Danish treatment is a twenty-four hour cure. While Greenwood has found it very successful in hospital practice it is hardly suitable for private practice because of the difficulty of compounding the ointment and the expense.

In use, the patient receives a cleansing bath, dries himself thoroughly and afterward rubs the whole of his body, except his head, with the ointment. The rubbing should be done carefully and thoroughly but without over great vigor. The patient should wait for a quarter of an hour before going to bed to give the ointment a chance to work into the skin. Twenty-four hours later he is given a second cleansing bath and, after drying, his clothing which has meantime been sterilized.

The formula for the ointment is as follows:

1—1 kilogram of sublimed sulphur is mixed with 2 kilograms of a 50% solution of potassium hydroxide (as free from water as can be obtained). Gentle heat is applied till reaction ceases and the solution becomes clear. When the process is complete, one should be sure that the sulphur is in slight excess.

2—225 gm. of petrolatum is mixed with 225 gm. of wool fat, without heat.

3—To this mixture is added 375 gm. of the sulphur solution (No. 1).

4—To 40 gm. of 20% sodium hydroxide solution is added 28 gm. of zinc sulphate. The mixture is agitated thoroughly till reaction ceases, poured on filter paper and washed thoroughly. The washed precipitate is then added to the foregoing.

5—Liquid petrolatum is added to obtain a total weight of 1000 gm.

6—5 grams of oil of bitter almond is added to check the somewhat disagreeable odor of hydrogen sulphid.

The activity of the ointment depends upon the sulphids of potassium which are produced on contact of the ointment with the skin.

Since the discovery that many *affections of the feet and hands* which were once considered as eczema were in reality due to a *Fungus* many methods of treatment have been published. Michael, from an experience with 750 cases, has catalogued the essential features of treatment under four heads.

First—Mechanical or chemical removal of the epithelial debris and the corneal layer (curette, keratolytics);

Second—Destruction of the fungus by drugs (Benzoic acid, potassium permanganate, chrysarobin, iodin, phenol, etc.);

Third—Alteration of cellular activity by physical means (Roentgen ray, ultra violet light);

Fourth—Prophylaxis.

In the vesicular form, Michael advises opening the vesicles and then painting them with a solution of permanganate of potassium 1:2000. After vesiculation has ceased he uses 10% silver nitrate and the ultra violet light in erythema doses.

In the macerated type, he uses the curette every second day, painting after curettage with 20% Iodin Compound. On the alternate days, he prescribes the Whitfield formula of benzoic acid, sulphur, etc., washing the skin with a gritty soap before applying.

While, as stated above, the tendency nowadays is to ascribe all "eczematous" eruptions of the soles and palms to a tinea, Socoli (Ann. de Derm et Syph. Feb. 1924, p. 69) brings out the very important point that there are some affections of these regions which are not mycotic in origin. With Sabourand, he investigated the vesicular eruptions of the hands and found that they were usually mycotic. But there are some vesicular affections of the feet and hands which are not but which are due to external irritations and to the ingestion of certain drugs. Besides these, he says, there is a true Dysidrosis.

Most of us, when called to a case of *Purpura Rheumatica* say that little or nothing can be done for the eruption per se, that the real treatment lies in overcoming the internal condition which lead to the eruption. Rautenberg reports (Deutsch Med. Wchn., 1923, p. 112) a new treatment and a new conception. He reports 23 cases.

Instead of the old anti-rheumatic medication he advises the intra-lumbar injection of 4 c.c. of a 0.5 per cent procain sodium chloride solution. This, he says, will effect an immediate and permanent cure. He claims that whereas, by the old methods, it takes two or three weeks to clear up a case of purpura rheumatica, by his newer method it requires but a few hours or, at most, one or two days.

He explains his lumbar therapy by a new conception of the pathology of the disease. Instead of being skin hemorrhages, as is usually assumed, Rautenberg asserts that the disturbance is located in the spine; that central tropho-neurotic influences affect the peripheral vascular nerves which results in the production of a dilation of the capillaries of the cutis and a circumscribed inflammatory edema.

The conception that *Lupus Erythematosus* is a tuberculous affection has long prevailed in the medical profession. For some years now the opposition to that theory had gradually been gaining strength. Now comes a comprehensive, logical article by McLeod of London (Arch. Derm. and Syph. Jan., 1924, p. 1) in which the writer comes to the conclusion that the disease is not a pathological entity due to one specific cause but is a peculiar cutaneous symptom which may be produced by a variety of causes of a toxic character.

McLeod believes that a direct etiological connection with tuberculosis is no longer an admissable theory. The actual cause, he writes, is a circulating toxin arising either from a functionally diseased organ or, possibly, from some local septic focus. Among the predisposing causes the most important is a lowered cutaneous tone either hereditary or from a lowered general state of health or an enfeebled peripheral circulation.

Lupus Erythematosus is at once one of the most disfiguring diseases and one of the most obstinate to treatment. It is a dictum among dermatologists that it will bear no half measures. They must be either severe or mild. Usually it is not possible to remove the disease without a scar resulting. That is considered a good result. Up to date the best "severe" measure of treatment has been refrigeration but it possesses several disadvantages. It is painful. It usually must be repeated, often many times. If not skilfully used it may aggravate. Radium has been tried, of course, but hitherto the reports have been discouraging. There is therefore considerable interest in Culver's report that he has succeeded where others have failed (Radium, April, 1924) or, as he says, has obtained satisfactory results. He however fails to define his use of the word.

As noted, the results with radium have been so poor that the method has been practically abandoned. Culver says that this is because of faulty technic. Up to 1920 he too got bad results but in that year, with a new technic, he began to get "satisfactory" results. Since 1920 he has used radium in this wise. Half or full strength plaques are employed heavily screened with metal and with paper or rubber, to cut out the alpha rays and to get additional distance. To illustrate, a plaque, two centimeters square, containing ten milligrams of radium element is screened with 0.2 to 0.4 millimeters of lead and 8 to 12 layers of writing paper or with 1 to 2 millimeters of rubber. The exposure lasts from 2 to 2½ hours. Some redness follows and, often, eight to ten days later, superficial necrosis which however heals quickly.

The etiology of *Psoriasis* baffles research. Consequently treatment remains purely symptomatic, sometimes not even that. Nevertheless, when any one reports cures, by methods even bizarre and without apparent logic, he must be listened to if only to be later condemned. Recently, Hollander (Dermat. Wchnsch. Nov. 10, 1923, p. 1325) has reported nine cases treated by a combination of intravenous injections of sodium salicylate and of ointments applied locally. The ointments for the face and scalp contain salicylic acid and ammoniated mercury. Those used on other parts of the body contain salicylic acid and cignolin. Hollander reports that this combined treatment removed the eruption in five cases within three or four weeks. In four cases the result was not so good. He asserts also that this treatment delays recurrences.

More justifiable and therefore more hopeful is Gawalowski's report. (Ceska Dermat. 1923, p. 5.) He studied Psoriasis in its relationship to hypofunction of the thymus. His results confirm those of Samberger and Brock that by means of small doses of the Roentgen ray to the thymus region it is possible to decrease, or even to remove, the parakeratotic diathesis. This result he explains on the ground of the increased thymus function induced by the rays.

Pemphigus is a disease, always of grave diagnosis, about whose etiology practically nothing is known definitely. Various investigators have at times found organism which they have accused of causing the disease but none of the alleged discoveries have received sufficient confirmation to have acquired an acknowledged standing.

In 1923 Eberson reported that he had isolated an organism from the blood of seven patients which, when inoculated into rabbits, produced an eruption resembling pemphigus and that he had afterward recovered the same organism from the blood of the inoculated rabbits.

Covey (Arch. Derm. and Syph. March, 1924, p. 305) now reports a case in which there was found, at autopsy, peculiar bodies in the cord, chiefly in and about the dorsal roots. His case was that of a woman 53 years old. The course of the disease was three years from the time of the first eruption to death. Twice, during the course of the disease, the patient had "explosions" when fresh lesions appeared suddenly in greater abundance than usual. On both occasions, the explosion followed surgical handling of carious teeth.

Covey calls attention to the symmetrical distribution of the eruption in his case and asserts that the distribution of the lesions followed the course of certain spinal nerves. At autopsy it was in the dorsal roots of the nerves, clinically accused, that the "bodies" were found to be most numerous. When the dura was punctured cerebrospinal fluid poured out as if under pressure. On the dorsal surface of the cord ten or twelve white, opaque, rather firm bodies were found measuring from 1 to 3 or 4 mm. in diameter. In sections taken from the upper dorsal region of the cord to the tip were multitudes of peculiar bodies, grouped chiefly about the exit of the dorsal horn, in or just beneath the pia mater. These bodies are described as being spherical in outline, homogeneous in structure, staining a purplish blue with hematoxylin and eosin. They varied in size from 7.6 to 23.9 microns in size. They had a definite limiting membrane and nothing could be observed resembling a nucleus in any of them.

Covey sums up his case in the words that certain symptoms and findings suggest a chronic low grade infection. Other observations seem to point to possible lesions in the spinal cord, the dorsal roots or their ganglions, as the seat of the trouble, the skin lesions being merely a manifestation of trophic disturbance in this tissue as a result of the nerve lesions. Definite gross and microscopical lesions are readily demonstrable in the predicted areas at post mortem.

Many smokers when in sport clothes carry matches in their trouser pockets. For such men Foerster's report (J. A. M. A. Oct. 6, 1923, p. 1186) of five cases of *Match Dermatitis* will have an especial interest.

In all the cases the skin irritation and eruption occurred first over the areas in apposition to the pocket in which the matches were carried. Itching and tingling and burning were the first symptoms, followed later by redness with scaling, sometimes with papules, sometimes with edema as in urticaria. Cure resulted when all contact with matches was avoided and an appropriate soothing preparation applied. The actual cause of the dermatitis was the sesquisulphid of phosphorus with which the heads of the "strike anywhere" matches and the sides of the safety match box are saturated.

Sweating seemed to cause an aggravated eruption probably because the sweat dissolved the phosphorus.

Why superficial *Burns* should so often give rise to untoward effects that seem to be out of all proportion to the actual area or the extent of the apparent damage to the body has long been a puzzle.

From their studies conducted at the Toronto Hospital for Sick Children, Robertson and Boyd draw the conclusion (J. Lab. & Clin. Med. Oct. 1923) that deaths resulting from burns within twenty-four hours are almost always due to primary shock. Deaths occurring later than this are due to toxic shock. The cause they say lies in the fact that the burn produces a toxin in the burned tissue, especially in the skin, which is taken up into the circulation, and perhaps absorbed by the red blood corpuscles. They found that extracts of burned skin were toxic whereas extracts of skin burned post mortem were inocuous.

Local Resistance to Spontaneous Mouse Cancer Induced by Roentgen Rays. Murphy, Masin and Strum (J. Exper. Med. Nov. 1923, p. 645) believe that the Roentgen ray does not damage the cancer cells directly. The beneficial results obtained by raying are due rather to the reaction excited in the normal tissue which renders them unfavorable soil for cancer growth.

The Limitations in the Radiotherapy of Cancer. Francis Carter Wood (N. Y. State J. Med. Nov. 1923, p. 446) arranges the limitations of irradiation in four groups—physical; those dependent upon the patient's general sensitiveness to irradiation; the anatomic relations of the tumor; and the resistance of the tumor.

The biology of the tumor he considers the most important limitation of all. It is well known, he states, that prickle cell tumors are more resistant than basal tumors and indeed are so resistant that they should never be treated by irradiation. In his opinion, all operable malignant tumors should be treated surgically and only the inoperable by irradiation.

Adiposis Dolorosa. Curschmann reports three cases (Med. Klinik, July 8, 1923, p. 929) which improved greatly under Thyroid medication. The pains were relieved and the tendency to obesity disappeared. Curschmann emphasizes the necessity of thinking of Dercum's Disease in cases of obesity with neuralgia-like pains instead of clinging to the idea of neuralgia or rheumatism or the menopause.

Gomez studied 100 cases of *Leprosy* (Philippine Islands M. A. J. Sept. '23, p. 277) to determine where and what are the initial symptoms of the disease. He found that, most often, the first sign was attributable to the nervous system, a more or less localized, well defined area of numbness on the legs. The second most frequent initial lesion were red spots, usually on the face in the malar region. In a few cases the spots were single but usually they were multiple. The third initial sign in the order of frequency were white spots also occurring most often on the face and also most often multiple though occasionally single. In a few cases, the first symptom was a generalized eruption of nodules. While the most common seat of the initial appearance of red spots is on the face occasionally these eruptions are generalized. Not infrequently the initial eruptions appear without any preceding signs of systemic disturbance. Finally, Gomez is impressed with the frequency of the nervous manifestations.

BOOK REVIEWS

Clinical Aspects of the Electrocardiogram. By HAROLD E. B. PARDEE, M.D. Published by Paul B. Hoeber, Inc., New York. 1924. 222 pages. Price, $4.00.

This volume fills a much needed gap in the medical literature of this country. In it the author has put together, in one rather concise volume, all the important features of clinical electrocardiography. The student can find the theoretical considerations discussed in a very logical manner. Controversial points are mentioned but not gone into in great detail. A sufficient amount of space is given to the underlying physiological principles to enable the reader to understand the subject. The physician who is constantly in touch with electrocardiographic work will find in this volume numerous helpful clinical suggestions, especially in obtaining information concerning myocardial disease and coronary sclerosis. The author has had a very large and intimate experience both with the technical part of electrocardiography and its interpretation and the bedside features of the problems involved. This lends to the book a practical value that is important. For those who might be interested in the technical details of operating an electrocardiograph, a separate chapter is devoted to a complete description of this. The illustrations are clear and well chosen. This volume ought to become widely used by all those interested in the subject.

Diseases of Middle Life

The two volumes entitled "Diseases of Middle Life" are edited by Dr. Frank A. Craig, of the Henry Phipps Institute of the University of Pennsylvania. Each volume contains 900 pages, with articles by 23 different authors. There are no definite limits assigned to the age period designated as "Middle Life," the term being employed in an elastic way and left to each individual author as he sees fit. No special articles are devoted to tuberculosis or syphilis as the author believes that these two diseases should be considered by different writers in their description of the various manifestations in the organs forming the subjects of their articles.

The author believes that the time to treat old age is during "Middle Life" and the object of the work is to facilitate the recognition of the diseases in an early stage when they are curable and preventable.

There is a place for such a book dealing with the morbid conditions of middle age and Dr. Craig's admirable contribution will be of value both to practitioner and to student

Case Records
# of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 10471

A six-year-old boy was brought to the Emergency Ward July 14. The history obtainable from him was inadequate and piecemeal. The chief complaint was that he went to sleep at play.

F. H. His father had deserted the family. The patient and seven brothers and sisters were at present under the care of the State, and one who had had poliomyelitis was in an institution for the deaf, while their mother was in the Lying-in Hospital.

P. H. He had whooping cough at one year. In February, six months before admission, he had chorea and was in a hospital for a month or so. He was discharged with orders to remain in bed. After staying in bed for two months he had his tonsils removed at the same hospital. Shortly afterwards he had an examination and was told that he was much improved and would not need to return. As far as he knew he had been entirely well until the present illness.

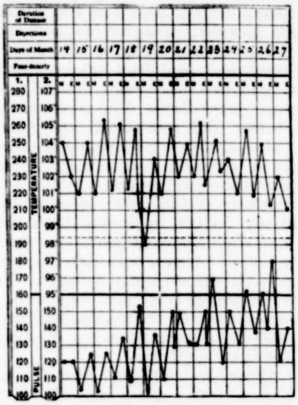
P. I. A week before admission his right ankle was painful. The attendant in charge noticed that for the past week he had not been so well as usual and had fallen asleep while at play.

P. E. A well nourished, very intelligent child, not seeming ill. Cheeks flushed. Skin hot and dry. Throat slightly reddened. Tonsils removed. Tongue slightly coated. A few posterior cervical glands. *Lungs* normal. *Heart*. Apex impulse felt in the fifth space, nipple line. 3 | 6.5 Rate 120. Action normal. A roughened blowing systolic murmur at the apex, resembling a split first sound. *Abdomen, extremities, pupils* and *reflexes* normal.

T. and *P*. as shown in the chart. *R*. to July 19 20-54, after the noon of July 20 47-100. *Urine*. Amount not recorded, sp. gr. 1.010-1.020, the slightest possible trace of albumin at one of four examinations, acetone at two. *Blood*. Hgb. 90%-80%, leucocytes 21,600-47,200, polynuclears 68%-87%, reds 4,864,000-2,880,000, not abnormal. *Wassermann* negative. *Lumbar puncture* in the Emergency Ward. 10 c.c. of bloody fluid under greatly increased pressure—200 after the loss of some fluid. 5000 cells, mostly reds. After adding acetic acid 70 whites. Total protein 63, sugar 50, goldsol 1124321000. Wassermann negative. *Pirquet* negative. *X-ray*. Apparently some enlargement of the heart shadow, particularly to the left. There was so much motion in the plate that the lung fields could not be interpreted.

Orders. July 14. Soft solids. Force fluids. July 23. Sodium salicylate gr. xx t.i.d. after meals. Sodium bicarbonate gr. xx t.i.d. July 26 and 27. Paregoric minims xv every three hours p.r.n.

In the Emergency Ward the patient had headache and a temperature of 104.2°, pulse 120 and respirations 18. Lumbar puncture was not satisfactory because of a bloody tap.



The morning of July 17 the heart sounds were markedly changed. The systolic murmur was much louder, and there was a short, rather high pitched diastolic heard to the left of the nipple. Next day the heart seemed somewhat further out to the left, the percussion measurement being 7.5. There were two small hemorrhagic areas on the left lower eyelid. That night he complained of pain in the right upper quadrant on deep palpation. This was believed to be due to the liver, which was a centimeter below the costal margin. The next morning there was a blowing diastolic sound, shifting in position, best heard in the nipple line about a centimeter below the nipple. There was a hemorrhagic area on the right lower lid. July 20 small petechiae were visible in the conjunctivae. A blood culture showed Gram-positive spore-bearing bacilli. The conjunctival petechiae developed white centers and then disappeared.

July 21 there were râles and irregular slight dullness in both backs. July 22 the spleen was palpable for the first time. July 23 the apex impulse was quite forceful and a systolic thrill was felt over it. The left border of dullness and the maximal impulse were in the fifth space 6 cm. to the left of midsternum in the midclavicular line. A rough systolic murmur partially obscured the first sound. The second sound was loud and sharp. There was a third sound, but no diastolic murmur. At the base P_2 was markedly accentuated. The first sound and the systolic murmur were not so loud as at the apex. There was no diastolic murmur. In view of the condition of the ankle the therapeutic test of salicylates was given. July 24 the sounds at the apex were different,—the first sound very loud and ringing, a late systolic murmur, then the second sound, not loud, and a loud rough rumbling mitral diastolic murmur. The heart was very rapid, and it was difficult to time these sounds with satisfactory precision.

The next morning there were two petechiae on the right forearm. The red count was diminishing. The boy looked quite ill. He vomited a good deal, and could not retain water. The urine showed acetone for the first time. Later he retained more fluid. The next morning he seemed better, did not vomit, and took fluids well. The urine still showed acetone. The petechiae on the arm were fading. There was a new one on the left forearm.

The morning of the twenty-seventh the temperature was as low as it had been since entrance, and the pulse was less than usual. The respiration rate however was 100, its maximum. The breathing was evidently difficult. The boy was irritable and did not take fluid well. There were new petechiae on the neck and a finger, and during the day others appeared in the mouth and on the lower abdomen.

In the afternoon his mother visited him, leaving at four o'clock. After she left he cried a great deal and became very restless. He quieted down in half an hour or so and his breathing became less exaggerated. The left chest was dull, and râles were heard throughout. The right chest was comparatively clear. He gradually lapsed into coma, and died at 5:50.

Discussion

BY DR. RICHARD C. CABOT

NOTES ON THE HISTORY

A boy well enough to be playing would not be in the midst of epidemic encephalitis, so I take it that is not what this boy had at that time. I remember vaguely nervous diseases in which people tend pathologically to go to sleep. I do not recollect anything clearly about any one of them and cannot state of what this may be a symptom.

In the hospital they must have thought either that his heart was affected or that there was a possibility of its being affected,—what the cardiac clinics are calling "potential cardiac disease"—a phrase I do not particularly like. Presumably they did not find any definite valve lesion. If they had found one they would have told him to come back. So we have here the background of chorea and the fear of heart disease, though we do not know anything very definite about the heart.

NOTES ON THE PHYSICAL EXAMINATION

At six years this heart seems large, but I should not be certain of anything. The description of the murmur sounds to me like a zebra resembling an armadillo. I do not see any connection whatever between a systolic murmur and a split first sound. They are as different as anything can be. But we have the record, and we have to guess as to what the man who wrote it probably meant. I should not be able to say that there is anything wrong with the heart from what we have here recorded.

We have a fever and nothing to show for it. (See chart.) The temperature was seldom below 101°, usually from 101° to 104°, with a steadily ascending pulse never below 100, usually above 130, with a respiration especially high during the last week,—a high continued fever.

Presumably the 87% polynuclears goes with the 47,000 leucocytes, and would represent a great increase of polynuclear cells. I would call attention to this remarkable, extraordinarily acute anemia. He entered on the 14th and within ten days, if these counts are right—and I do not know any reason to doubt it, his reds fell from essentially normal, 4,800,000, to a very severe anemia, two million, in ten days. That is a rare occurrence and in my experience comes only in anemia of a septic type. I have seen a fall even swifter than this in puerperal sepsis. The anemias resulting from sepsis are the acutest anemias that I know, with tremendous destruction of blood.

The lumbar puncture does not tell us anything about the white cells, which are what we are interested in. Even after adding acetic acid we do not know what kind of white cells were present; presumably there was some mixture of blood.

Sugar is recorded in different ways, so that I do not know what this reading means, whether it is increased or diminished.

Dr. Frank Fremont-Smith: W. Mestrezat in Annales de L'Institut Pasteur, August, 1924, states that normal sugar values in cerebrospinal fluid lie between 55 and 65 mgm. per 100 c.c. In Dr. Ayer's laboratory we allow somewhat greater variations, and would consider anything between 50 and 70 mgm. as within normal limits. What changes in cerebrospinal fluid sugar may occur with the normal variations of the blood sugar are not yet established. Different methods of determination may give values varying as much as 5 to 10 mgm. per 100 c.c. At present we cannot set too rigid limits as to normal variations.

Dr. Cabot: I should say that we really had not any more knowledge after that tap of the spinal cord than before, except that there is no positive evidence of meningitis. That is what they were thinking of, undoubtedly, with his fever and his mental state.

Certainly from this X-ray I should not be able to say that there was anything wrong about the lungs, and I should not even be sure about the heart, as this obviously is not a seven-foot plate.

"The heart sounds were markedly changed." That is the thing we are watching for when there is any suspicion of endocarditis,—a change in the heart sounds from day to day. The percussion measurement showed the left border one centimeter more to the left, which is not a great deal.

The pain in the right upper quadrant may have been due to infarction of the kidney, which gives pain in about this region.

I take it there was contamination of the blood culture.

Apparently there were at first no petechiae except those in the conjunctivae, which is rather surprising.

The râles and dullness make us think that the circulation through the lungs is poor and that there is some passive congestion.

That is a good observation of July 22. They have been looking for the spleen and know it was not there before. That is, it became enlarged while they watched for it. In my experience a spleen that becomes enlarged while one watches it always means a spleen with an infarct in it. Nothing else makes a spleen grow under observation.

I should like to call attention to the importance of a thrill in acute endocarditis. I do not know any other more constant cause of thrill than acute endocarditis. We think of it in relation to mitral stenosis, to aneurism, and to congenital heart disease, but we do not ordinarily think of it as much as we should in relation to acute vegetative endocarditis.

The diastolic murmur which was heard before has apparently gone away, but I prophesy that it will return if the observations are good. (It came back on July 24.)

The urine showed acetone presumably because of the vomiting.

DIFFERENTIAL DIAGNOSIS

I can see but one diagnosis that is at all probable here. Everything seems to point straight towards that. Let us sum up the evidence. Here is a six-year-old boy who has had chorea, who has had his tonsils out and therefore presumably has had some trouble there, who however has been well until a week before admission. Then he gets a bad ankle, presumably arthritis of the same type that caused his chorea and the trouble with his tonsils. Then he shows fever during two weeks' observation, with shifting heart murmurs, with a spleen that gets larger as we watch it, with a sharp attack of pain in the right hypochondrium which may be infarct of the liver or kidney, and with petechiae which at first were few but became more numerous before death. We have no positive blood cultures, but I think they would have been positive if anybody had taken them often and intelligently. I think they would have shown a streptococcus, very likely the viridans. We shall be interested to know whether Dr. Richardson gets it post mortem.

I think this is a case of acute endocarditis. Where? Everything points toward the mitral valve. Anywhere else? I think quite possibly it is on the aortic valve also, although there is no positive proof of it. Those are the commonest sites,—the mitral first and the aortic second, then the other side of the heart. Will the heart be enlarged? Yes, I think so. It usually is in acute endocarditis. That is one of the things that interested me most in going over all our heart cases recently. In acute endocarditis the heart is usually enlarged. It has to be stated that there is usually some chronic endocarditis with it, and I think there will be here, representing an older process on which this new process was implanted. This is the type of endocarditis which often extends up on the left auricle, gets off the valve. So much for the heart itself.

What else? We shall find, I think, general chronic passive congestion, though we have evidence of it only in the lungs. We ought to find infarcts in the spleen, probably in the right kidney, and if they are in those two organs probably elsewhere also.

A Physician: What is the origin of this infection?

Dr. Cabot: What we call rheumatism, that disease which produces chorea, joint trouble and endocarditis. I think he has been the subject of that infection, which has broken out now in several places, as we often see in tuberculosis.

A Physician: You think then he has been harboring some serious infection which has suddenly lit up?—not from recent tonsillitis, because he has had his tonsils removed.

Dr. Cabot: No. The tonsils were removed six months ago, and he was playing about after that. So I do not see how we can connect this acute endocarditis with the operation on the tonsils. I think these cases run on for months and years with valvular infection of low grade which may flare up from time to time much as in tuberculosis.

Miss Painter: They made a diagnosis of heart disease when he was at the hospital with chorea.

Dr. Cabot: That was perfectly rightly not told us before. That supports what I said about his having chronic as well as acute endocarditis.

A Physician: Does the diastolic murmur necessarily indicate an infection of the aortic valve?

Dr. Cabot: No. We get just the same murmur with involvement of the mitral alone.

A Physician: What is the explanation of the diastolic murmur?

Dr. Cabot: A presystolic murmur is always (late) diastolic, and if it extends a little further back into diastole we call it diastolic. In most cases careful observation will show a diastolic with the presystolic. This is one of the things which makes it more difficult to distinguish pure mitral lesions from those complicated by aortic lesions. Whenever we heard a diastolic murmur we used to say, "Oh yes, the aortic valve has now come in." Now we do not. I do not think that in this case anybody could be certain that the aortic valve is affected, but statisically it usually is in such cases, so I guess it is, not from physical signs but from statistics.

Could we have done anything to cure or prevent this disease? We do not want to think merely of the end results. So far as I see they did everything they could. They kept him in bed. They took his tonsils out. I do not know anything else they could have done.

Dr. Talbot: It is possible that he did not stay in bed.

Dr. Cabot: You are perfectly right that staying in bed is often more apparent than real. If the doctor comes upstairs quickly the patient is in bed, but his boots are on.

Dr. Talbot: I gathered the impression that because the tonsils are taken out it is assumed that they have been infected. That does not always follow with children, because it has become the habit to take them out no matter what they look like.

Dr. Cabot: It can almost be said that we take them out whether they are there or not.

Dr. Talbot: It is rather interesting in this connection that when we first commenced to have tonsils removed as a possible source of infection two cases of malignant endocarditis developed so quickly after the removal of the tonsils that it seemed as if the operation stirred up the endocarditis. But there are only two or three cases out of a large series, so that it seems to be rather a remote possibility.

A Physician: Do you think that might have stirred it up in this case?

Dr. Talbot: I think the time was about three months between the removal of the tonsils and his entrance into the hospital. These cases died within two or three weeks of the operation.

Dr. Cabot: This question often comes up: given an endocarditis of this type and bad tonsils, shall we take out the tonsils and so try to stop the endocarditis? I think the usual and best answer is No, but I have known them to be taken out in the middle of a fever like this.

An Attending Physician: The course was rather short for this sort of thing and he ran an unusually stiff temperature. Ordinarily they run a much longer fever. For the first four or five days we could not be sure whether the murmur meant anything or not.

Dr. Cabot: But the murmur came out while you were watching it?

Physician: Yes. We were perfectly sure of it later.

Dr. Cabot: Do you know what they thought about the spleen,—that it was simply infected or infarcted?

Physician: That we could not say. We suspected it might have been an infarct because of the pain.

Dr. Talbot: There is one interesting feature in these cases. The appearance of dullness in the left chest is a very common feature, and it either comes, as you suggested in this case, with chronic passive congestion, or it comes from compression. When it comes from compression it starts in a very small patch about the size of a quarter at the angle of the left scapula and gradually increases in size until it becomes quite large. It is relatively round and there is a normal note to percussion below it. Usually when it is one-sided it is from compression in children, because of the relative size of the heart and chest, and not from chronic passive congestion, but it may be congestion even though it is one-sided.

Dr. Cabot: That is the patch we used to associate so much with pericarditis. We used to say "Here is the pericardial pressure area." In the cases I remember we generally heard bronchial breathing.

Dr. Talbot: That always goes with it.

Dr. Cabot: I should not be sure it always does, but we were very apt to diagnose pneumonia, and to find post mortem that there was not any.

A Physician: This boy's heart was not big enough to give any.

A Physician: What is the approved course in chorea in regard to taking out tonsils?

Dr. Cabot: I should say that in a febrile chorea of the type one has to put to bed we should not interfere at that time. But many choreas are chronic, not severe, and then I should say, operate.

Dr. Talbot: In general I should say the same thing. But it is very difficult sometimes to say whether they have fever or have not. There is always a discussion in our ward whether a temperature of 99.8° F. is fever or is not fever. Ordinarily I believe that a rectal temperature of 99.8° is fever if the patient has been absolutely quiet. But if he has been very active we cannot tell.

Dr. Edward L. Young: I was interested, in taking temperatures in some children at the Robert Brigham Hospital, both by rectum and by mouth, to find that sometimes the mouth would be normal and the rectum over a degree different.

Dr. Talbot: It depends on how far in the thermometer is inserted and what time of day it is. In the afternoon the temperature is apt to be higher. In practically all normal active children the temperature goes up to about 99.2° if the thermometer is introduced between five and seven cm. into the rectum.

A **Physician**: Was the question of pericarditis ever decided?

Dr. Cabot: I do not see that we have any evidence of it. That does not mean in the least that it is not there. Our statistics show that we recognize one case in five and miss four out of five in pericarditis.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Acute bacterial endocarditis.

DR. RICHARD C. CABOT'S DIAGNOSIS

Acute endocarditis of the mitral and aortic valves.
Chronic endocarditis.
Hypertrophy and dilatation of the heart.
Infarcts of the spleen (and right kidney?).
Chronic passive congestion.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

Subacute endocarditis of the mitral valve.

2. *Secondary or terminal lesions*

Slight hypertrophy and dilatation of the heart.
Infarcts of the spleen and kidneys.
Embolic thrombus of left common iliac artery.
Beginning chronic passive congestion.
Beginning hydrothorax, hydropericardium and ascites.
Soft hyperplastic spleen.

Dr. Richardson: We were not permitted to examine the head. In the skin here and there were the small purple spots and areas which have been spoken of clinically. The abdomen was not distended. The wall was soft. There was a small amount of fluid in the peritoneal cavity, in each pleural cavity, and a slight excess in the pericardial cavity,—the beginning of hydrothorax, hydropericardium, and ascites. The gastro-intestinal tract and the peritoneal cavity otherwise were negative. The mesenteric and retroperitoneal glands were slightly enlarged but negative on section.

The lungs showed the beginnings of chronic passive congestion, and scattered through the visceral pleura and in the lung substance there were numerous smaller and larger dark red hemorrhagic areas. These hemorrhagic areas are common in streptococcus infections.

The culture gave no growth. Every once in a while from these cases we are unable to get a growth. Sometimes we get no growth in the blood stream but find one in a softened infarct of the spleen. But what Dr. Cabot had to say about getting cultures from the blood I think is quite true,—if you hit the right time you will get a positive culture. That is corroborated by the fact that one can see plenty of bacteria under the microscope in the endocarditic vegetations which were present in this case. So the organisms are there in localities, but we do not always find them in the blood stream.

The heart was slightly enlarged for him. The aortic and tricuspid valves were negative. But all along the curtain of the mitral valve were masses of thrombotic material hanging off and extending for a short distance along the endocardium of the left auricle and along the chordae tendineae, producing a beaded appearance on the chordae tendineae. These thrombotic masses on the valve were so large that when the valve was closed they obstructed it considerably. They were soft and spongy, to be sure, but still they choked the valve. The coronaries and the heart otherwise were negative. The myocardium was negative macroscopically and microscopically.

The portal vein and radicles were negative. It is important to look at the portal vein. Every once in a while the unknown cause will be found to be a portal vein thrombosis.

The spleen was slightly enlarged—180 grams —and in several places there were typical infarcts, rather recent.

The kidneys weighed 160 grams combined, and other than for smaller and larger areas of infarction were negative. In these cases we always insist on looking at the kidneys both macroscopically and microscopically, so that glomerulonephritis will not escape us, because glomerulonephritis occurs in just such cases.

This is a typical case of subacute endocarditis. In regard to the chronic base, there generally is one except in those cases where the infection is a direct quick one like an infection with the streptococcus hemolyticus or the staphylococcus, i. e., where there is immediate infection of the valve following the general infection. In this case at the base of the thrombi along the valve there was a little fibrous thickening on which these thrombotic masses were erected.

In the left common iliac artery was an embolic thrombus. A bit of the mitral vegetations had washed off and lodged there forming a thrombus on that side, with no change outwardly in the left lower extremity.

A **Physician**: In a case of this type would you say that there was in addition to the heart infection a general septicemia?

Dr. Cabot: Yes, I should. I think he died more of that than of his heart.

CASE 10472

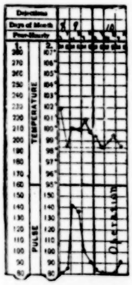
An unmarried American woman of sixty-one entered the Emergency Ward at midnight August 8 complaining of steady grinding ache over the abdomen.

F. H. Her mother died of arteriosclerosis at eighty-two, her father of apoplexy at fifty-six.

P. H. She had chickenpox, whooping cough and German measles in childhood. At fourteen she had a possible chancre on the vulva. Her bowels had always been irregular. In youth she had swollen glands, "scrofula." For forty years she had had morning cough with a good deal of sputum, mostly mucus, at times blood-streaked. At thirty-six she had "acute catarrh of the bowels," persistent diarrhea for two weeks. Seven years before admission she had bronchopneumonia lasting three weeks. She urinated once at night. For two months she had noticed she got out of breath more easily than usual.

P. I. The day before admission she had steady ache in the bowels early in the morning, gradual in onset, not relieved by sodium phosphate. Enemas were given with no results. She felt nauseated and vomited a little water twice. The morning of admission she took Epsom salts, which did not pass through. She noted tenderness and spasm.

P. E. A well nourished woman with flushed face, in some discomfort. Skin moist. Tongue rather dry and coated. *Heart* and *lungs* normal. *B. P.* 140/80. *Abdomen* tender throughout, rounded, tympanitic and prominent in the upper quadrants. Peristalsis audible but not visible. *Genitals, extremities, pupils* and *reflexes* normal.



T. and *P.* as shown in the chart. *R.* 21-31; *urine* not recorded except test for sugar negative; *blood* not recorded. *Wassermann* negative.

August 9 the distension was said to be less. There was no vomiting and no pain. The temperature was flat. At night the patient was somewhat worse. Enemata gave gas results. August 10 the abdomen was much more distended and she looked worse in every way.

That day operation was done, followed by transfusion. The patient died in the amphitheater.

Discussion

BY DR. EDWARD L. YOUNG, JR.

There is enough evidence here to say intestinal obstruction. Whether it is primary obstruction or whether it is secondary to some other condition going on, cannot be told. Apparently it was not considered an immediate emergency.

Whether or not distension is less in the course of twenty-four hours is very deceptive in these cases of obstruction. In case of doubt it is better to say that there is no change.

Intestinal obstruction has a mortality of approximately fifty per cent in this hospital, and other clinics give mortalities from slightly less to slightly higher. So that it is a serious condition. One of the reasons is the difficulty in recognizing the disease, in the early stage, and another the fact that other conditions in the abdomen do confuse the picture at times. But in this case it seems to me we have a very good picture which we ought to pay attention to unless the examination of the patient seems to give some other impression.

I do not see how anyone is justified in not operating on this at once, because, assuming that it is some other condition, I do not see how it can be anything but a condition helped only by operation. The mere fact that gas is passed by bowel with enemata does not prove that acute intestinal obstruction is absent. Small amounts of gas may get by and small amounts may be manufactured in the bowel below the obstruction. This patient has vomited only once. That is unusual, but a low intestinal obstruction does not cause vomiting early and in certain kinds vomiting is not an important symptom.

Of course the two things we think of with this picture are malignant disease and mesenteric thrombosis. Malignant disease shutting down as this apparently has might give vomiting very late. It is fair to say we should expect it in forty-eight hours. Mesenteric thrombosis might not give vomiting. It is hard to see how there could be any of the other conditions, inflammatory in origin. But it must be remembered that an acute appendix can be grossly atypical at sixty-one and might conceivably give such a story as is here given. And of course any one of the other causes of obstruction may be the cause of trouble.

I think the most important thing on the chart, the thing that would have frightened me the next day, is the rapid and considerable rise in her pulse.

I do not see any other diagnosis to put first than intestinal obstruction, but whether from some other condition in the background, like an atypical appendix or pancreatitis or a strangulated cyst, I think it is impossible to say.

Dr. Robbins: You do not think that the presence of distension and distress in the upper part of the abdomen is enough to suggest a lesion above the colon, do you?

Dr. Young: I am glad you spoke of that. It is said that distension high up is apt to mean obstruction high up. I do not think it means anything in diagnosis. I should make an incision below the umbilicus in the middle line, and on the theory of chances would put carcinoma first. I do not see that this forty years of blood-streaked sputum is of any great importance.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Acute intestinal obstruction.
Malignant disease?

PRE-OPERATIVE DIAGNOSIS

Acute intestinal obstruction.

OPERATION

Ether. Five-inch right rectus muscle-splitting incision, its center one inch below the pubis. Considerable bloody abdominal fluid was evacuated. The small intestine was markedly distended. A loop of ileum about six inches long and four inches from the cecum was found bound firmly by a tough adhesion. The loop was black, necrotic and foul smelling. There had been perforation into the pelvis with adhesion of the loop and foul smelling thin pus. The gangrenous loop was resected. The distal cut end of the ileum was ligated and inverted with continuous catgut. The proximal end was united to the cecum by suture. The small intestines were perforated in two different positions in order to free them from gas to aid in their control. With very great difficulty the abdominal wound was sutured with through-and-through. A loop of the small intestine was brought out to the lower angle of the wound and a catheter inserted. As the abdomen was closed the patient went into profound shock. Her head was lowered, her legs bent. Caffein and saline were given intravenously, adrenalin intracardiacally. After the intracardiac adrenalin the pulse improved very markedly. This however was transitory. Artificial respiration was continued twenty minutes without avail.

PATHOLOGICAL REPORT

A piece of small intestine about six inches long with some mesentery. For the most part it is dilated, blackish and necrotic.

Hemorrhagic necrosis of the small intestine.

FURTHER DISCUSSION

This case gives the answer for the high mortality. Operation at midnight when she came in might have found and probably would have found simply a dark bowel, not a gangrenous one, and a relatively simple operation would have given her a very good chance.

I do not think there are any other comments to make, except that this emphasizes a condition which with early diagnosis could be reduced from a mortality of fifty per cent to a mortality of five, at least so far as the obstruction of itself is concerned.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Volvulus.
Intestinal obstruction.
Operation, laparotomy, end to end anastomosis, resection of small intestine.

DR. EDWARD L. YOUNG'S DIAGNOSIS

Acute intestinal obstruction.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

(Acute intestinal obstruction from adhesion.)

2. *Secondary or terminal lesions*

General peritonitis.
Hemorrhagic areas of mucosa of small intestine.

3. *Historical landmarks*

Resection of small intestine.
Obsolete tuberculosis of the bronchial and mesenteric glands and apex of left lung.
Chronic pleuritis.
Cirrhosis of the liver.
Chronic perihepatitis and perisplenitis.

DR. RICHARDSON: The anastomosis of the ileum to the cecum was in good condition. The peritoneal cavity contained considerable purulent fluid. The peritoneum generally was coated with fibrinopurulent exudate, a frank peritonitis.

There was some obsolete tuberculosis of the bronchial and mesenteric glands, and a focus of obsolete tuberculosis in the apex of the left lung beneath some adhesions there.

The liver was rather small, 1200 grams, and showed a moderate amount of cirrhosis. The other organs showed nothing of importance.

DR. CABOT: Did the adhesions in the abdomen have anything to do with tuberculosis?

DR. RICHARDSON: They might.

DR. CABOT: So the ultimate diagnosis here might have been abdominal tuberculosis with resulting intestinal obstruction.

DR. RICHARDSON: That might have been. At the necropsy I found nothing to indicate that.

DR. ROBBINS: Were there many adhesions?

DR. RICHARDSON: No.

DR. ROBBINS: The description says just one band.

DR. RICHARDSON: Presumably associated with the tissue removed.

CASE 10473

First entry. An Italian housewife of thirty-five entered March 5, three years and a quarter before her final admission.

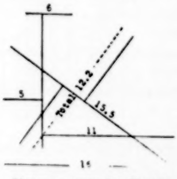
F. H. Good. She had been married twice. One child by the first marriage was stillborn at seven months, three children were living and well.

P. H. She had chorea at seven, measles and typhoid fever at thirteen, "rheumatism" at sixteen, painful and swollen joints. She had headaches at times. Until four years ago she had occasional sore throat. Every winter she had severe cough. During one of these attacks she had blood streaked sputum two or three times. She had night sweats occasionally. Five years ago she weighed 239 pounds, her best weight. Her usual weight was 220, her present weight 200.

Habits. Good.

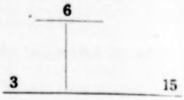
P. I. She had suffered from "rheumatism" ever since her first attack at sixteen. Five years before admission she had a particularly severe attack lasting six months and involving all the joints in pain and swelling accompanied by fever. The following year she began to have palpitation, precordial pain and dyspnea, especially on exertion, increasing until at admission she had them on slight exertion, excitement and emotion. Nine days before admission an attack of precordial pain, dyspnea and palpitation came on and had persisted. The pain was just over the heart, with no radiation. It was at times severe enough to make her cry out. She had been forced to sit propped up in bed with pillows. She had had some cough. The attacks had induced vomiting two or three times during the past three days.

Records of the Out-Patient Department. July 31 seven years before admission, she came complaining of rheumatism and palpitation. Examination showed her obese, weight 238½ pounds, with considerable dilatation of the veins of the face. Apex impulse of the heart in the anterior axillary line, left border of dullness 15 cm. to the left of midsternum, action very rapid, absolutely irregular, no murmurs, no radial pulse. Moderate edema of the ankles. In March of the following year a Wassermann was strongly positive. X-ray showed enlarged heart (see diagram). Marked prominence in the region of the right auricle. Limited respiratory excursion. (The conclusion is withheld.) At the South Medical Department it was found that she had been having weekly injections in the hip by a physician for three months. August 23, September 17 and December 6 Wassermanns were negative. In August, three years later, she gave a history of transient diplopia thirteen years earlier, a paretic attack on the right side ten years earlier and of the left hand, face and leg five days ago, with incoherent speech. In September there was no paresis. The heart was fibrillating. B. P. 140/80.



Measurements by X-ray.

P. E. Weight 190 pounds. Marked pyorrhea. ***Lungs*** **clear.** ***Spine.*** Tenderness on pressure over sacroiliac region. Apex impulse of the ***heart*** felt in the fifth space 15 cm. to the left. Percussion measurements as shown in the diagram. Action absolutely irregular, not rapid. Sounds of poor quality. P_2 accentuated. No murmurs. Pulses equal, irregular. Pulse deficit 8-30. ***B. P.*** 136/78-139/89. ***Abdomen, extremities, pupils*** and ***reflexes*** normal. ***Rectal*** and ***pelvic examinations*** not done.



Measurements by percussion.

T. 97°-98.4°. *P.* 51-75, radial; pulse deficit 8-30. *R.* normal. *Urine.* ℥ 18-22, sp. gr. 1.020-1.030, turbid at one of three examinations, cloudy at another, a very slight trace of albumin at two, bile at the last; leucocytes at two, (no catheter specimen). ***Blood.*** Hgb. 85%, leucocytes 10,500, polynuclears 67%, reds normal. *Wassermann* negative. ***Stools*** negative.

Orders. March 6. Karell diet with fluids to 1500 c.c. March 9. Fluid extract of convallaria 5 c.c. t.i.d.

March 11 the patient was discharged against advice.

History of interval. The patient continued to have dyspnea, palpitation and attacks of precordial pain, for which she took small white pills under her tongue with little relief.

Second entry. June 4, three years and a quarter after leaving the hospital.

P. I. The morning of admission after some exertion she was seized with pain in the left arm. Within fifteen minutes she had pains in both legs and was unable to move them. Her physician gave hypodermics which eased the pain.

P. E. (As before except as noted.) Somewhat cyanotic, with dusky cyanosis of the dependent portions. Lying uncomfortably, breathing with difficulty and unable to move either leg. Skin moist and clammy. Breath foul. Some pyorrhea. Apex impulse of the *heart* not recorded. Action absolutely irregular. No murmurs recognized. Percussion uncertain because of obesity. *B. P.* 165/80. *Lungs*, ***abdomen, genitals*** and ***rectal examination*** not recorded. Lower ***extremities*** cold and clammy, completely paralyzed. Pulsation was felt in both femorals. No pulsation in dorsalis pedis or popliteals. No ***reflexes*** obtained.

Before operation ***T.*** 99.8°, ***P.*** 70, ***R.*** 30, ***urine*** not recorded; ***blood,*** hgb. 80%, leucocytes 19,500, polynuclears 80%, reds and platelets normal. ***Wassermann*** negative.

Operation was done the morning of June 5. The post-operative history will be given by the operating surgeon. June 5 the patient was discharged against advice.

DISCUSSION

BY DR. RICHARD C. CABOT AND DR. EDWARD D. CHURCHILL

NOTES ON THE HISTORY

DR. CABOT: This past history prepares us for some sort of heart trouble. She has had all the illnesses usually associated with heart trouble—rheumatism, chorea, tonsillitis—but she has had no heart symptoms as such until we get to the present illness.

The question as to her precordial pain is of interest. Anybody with failure of compensation in heart trouble has the sort of precordial oppression that any of us would get if he ran a mile. We can call that pain. It is painful. But some words ought to be added to distinguish it from the characteristic pain of angina. Here we cannot tell one from the other. Generally heart pain of failing compensation is distinguished from angina (1) because it lasts so long, (2) because it does not radiate down the arm, (3) because it is not affected by nitroglycerin.

This pain seems to have lasted for hours or days, and hence is not at all apt to be of the angina type. It is more likely to be due to pericarditis or to represent the pain of failing compensation.

The Out-Patient record gives palpitation earlier than we had it in the history of the present illness,—seven years rather than four. We may say then that the heart has shown some symptoms for at least seven years.

The heart measurements here given cannot be accounted for by obesity. Obesity does not enlarge the heart, so far as we know. We used to hear about fatty overgrowth of the heart—all the older textbooks talked about fatty overgrowth and what it could do. We have found nothing in our necropsies here to confirm that. We see fatty overgrowth and fatty infiltration at necropsy, but we do not see them producing physical signs, either enlargement or weakness.

"No radial pulse" is a strong statement about a person walking into the Out-Patient Department. I wish we had been there to confirm that. It does not seem probable that a person would be walking up the stairs of the Out-Patient Department with no radial pulse. Perhaps they did not feel both pulses, and the artery happened to go so deeply on the one side, (as the radial pulse so often does,) that they did not feel it. With no pulse we should expect either very severe symptoms or drastic remedies; but nothing happens.

16 cm. in total diameter is an undoubtedly large measurement. Our rule here is that this diameter should not be up to one-half the internal measurement of the chest inside of the ribs. That measurement is not given here, but 32 cm. inside the ribs would be a large measurement even for a man, so that 16 would be an enlarged heart.

The X-ray of the heart does not lead us to any particular conclusions. That is what we find in almost any failing heart. The same is true of "limited respiratory excursion," though it might also have reference to an adherent pericardium tying things up. We shall come back to that later.

Lesions of the sort she had in August three years ago make us think of brain disease and its common cause in syphilis. But if we have a rheumatic history we should also think of embolism, which can give us all of that without having to suppose any other vascular brain lesion. I take it these brain symptoms all passed off.

We know that as far back as three years before she had had auricular fibrillation. "No murmurs" is natural enough with fibrillation. But I will bet that if she had been made to lie down and had been listened to with the knowledge that we have today we should hear a mid-diastolic murmur, the murmur that most people miss because they have been trained to hear a diastolic and a presystolic murmur but not to look for this murmur and to look especially when a patient lies down. I am sure that I have been missing it through most of my own medical life up to a few years ago.

Blood pressures in this sort of case, with absolute arrhythmia, are worth very little. We have to pick out certain beats as the ones we are going to measure. What it ordinarily means is the blood pressure in the strongest beats.

In a woman, when there are leucocytes and albumin in the urine, if we have not a catheter specimen we have no reason whatever to draw any conclusions, because vaginal secretions can not be excluded.

My guess is that those pills were nitroglycerin, and since this pain was not of the type that nitroglycerin could be expected to relieve it did not relieve.

A sudden onset of paralysis of both legs in a patient with this history—what is this likely to be? My guess is thrombosis of the abdominal aorta. When both legs are suddenly paralyzed in this way we cannot help thinking of something as far back as thrombosis of the abdominal aorta.

A PHYSICIAN: How do you account for the paralysis?

DR. CABOT: Because there is not blood enough to run the muscles. We get paralysis when we do not have blood enough in our muscles to work them.

NOTES ON THE PHYSICAL EXAMINATION

There is nothing so far about any evidences of gangrene.

Of course paralysis from any cause may give cold and clammy legs. But we are inclined here in favor of a circulatory cause because of the way it is recorded in the examination. The value of the note about pulsation depends a little on how skillful the examiner is in feeling the dorsalis pedis. One has to have done it a good deal. We shall take it that this was done by an expert and that he really could not feel any pulsation either behind or in front. Pulsation was felt in the femorals, therefore we have not got thrombosis of the abdominal aorta. It must be something lower down.

What kind of operation are they going to do?

A Physician: Amputation.

Dr. Cabot: They might amputate both legs, but they have not become gangrenous. One always takes a chance of circulation being restored. So I will take a good bet against amputation. Here is a case which presumably will go on to gangrene in both legs and in which therefore there is every reason to take a chance, and we know that surgeons are taking the chance nowadays of going in to try to take out a thrombus. My guess is that that is what somebody did. The question is, where did they go? I am not sure. They must have gone in on both sides, and they presumably did not go into the abdominal aorta. I guess they had further information than we have here as to exactly where that thrombus was, based on further physical examination. I cannot go further on the basis of what we have.

I believe a bilateral operation was done to take a thrombus out of a blood vessel, and I believe that blood vessel was an artery and not a vein, because we are dealing with something coming from the heart presumably. It should be bilateral.

Dr. Churchill, had you any facts that we have not got as to where this was?

Dr. Edward D. Churchill: No actual findings I believe, except that approximately eight inches below the inguinal ligament on each thigh was a line of demarcation separating the area of normal circulation above from the remainder of the extremities. The legs below this line were cyanotic and in places mottled with irregular livid spots. They were cold to the touch, and presented complete loss of sensation. A pin-prick on either foot was not felt by the patient and was not followed by any bleeding. There was complete loss of motor power and of the tendon reflexes. The important thing is that pulsation could be felt in both femoral arteries but not in the popliteals or dorsalis pedis.

Dr. Cabot: From the point of view of pure anatomy, what is the reasoning from this point on? The presence of pulsation in the femorals means that the abdominal aorta is not blocked, but what next?

Dr. Churchill: The next reasoning is by deduction rather than by further observation. An embolus tends to lodge at the point of division of a blood vessel, and the point of division in the femoral artery between the place where we feel the pulsation in the groin and the place where we feel none in the popliteal space is the point where the artery gives off the large profunda branch. So we assume from accumulated experience that these thrombi were at those points.

Dr. Cabot: They might have been farther down, mightn't they?

Dr. Churchill: Yes, I suppose so; but emboli characteristically lodge at the bifurcation of a vessel, or at the point where a large branch is given off.

Dr. Cabot: That is what I wanted to bring out. I did not know that that spot had a bad reputation for holding up emboli.

I shall go over what is to be said about the heart and then we shall ask Dr. Churchill about the operation.

This is evidently a rheumatic heart. The commonest type of rheumatic heart is mitral disease. Therefore statistically, with no reference to physical examination, this is probably mitral stenosis. But what more have we? We have auricular fibrillation extending for a long period. That is more common in mitral stenosis than in any other known disease. We have no evidence of an aortic lesion. Most aortic lesions will show themselves by murmurs and by changes in the pulse. We have no definite evidence of chronic pericarditis, though we cannot rule it out. I have never known a chronic pericarditis to run just this course, though it might. So that my best reasoning is that this is a case of mitral stenosis. I will go on from that point. If this is a case of mitral stenosis then there probably was a ball thrombus in the left auricle, such as we find in most longstanding cases. If there was a thrombus in the left auricle pieces of it might have been detached and come down through the mitral into the general circulation and plugged these leg arteries at the point where the deep femoral goes off from the main trunk. So that I should suppose, in the absence of any lesion anywhere else, that was the main diagnosis,—mitral stenosis with thrombosis of the femorals at the point where the deep femorals are given off.

We have no necropsy here and can only expect confirmation in relation to the operation.

X-RAY INTERPRETATION

Myocarditis.

DR. CABOT'S PRE-OPERATIVE DIAGNOSIS

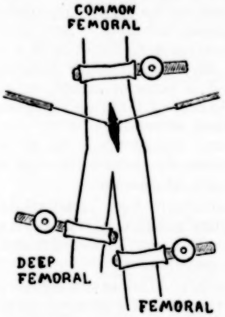
Mitral stenosis.
Thrombosis of the femoral arteries.

PRE-OPERATIVE DIAGNOSIS

Bilateral embolism of femoral arteries.

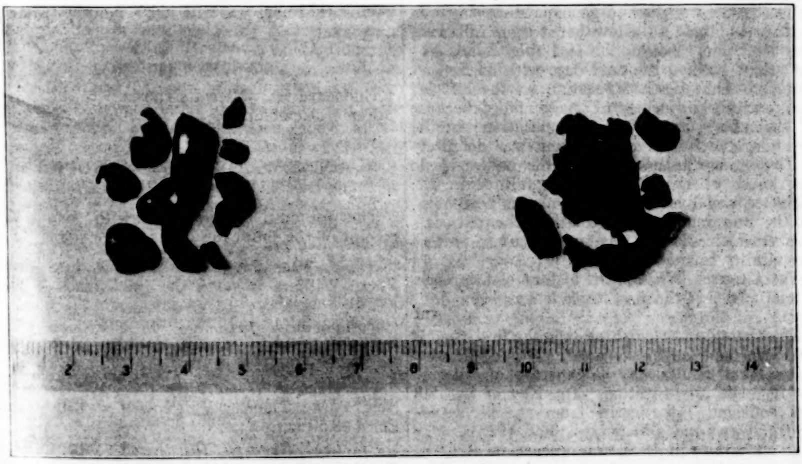
Operation

Under novocain anesthesia a four-inch vertical incision was made in the left groin and dissection carried down to expose the femoral artery for a space of one and a half inches above and below the origin of the profunda femoris. The artery at the upper end of the wound was beating with expansile pulsation. Below this there was a downward thrust of the artery with every pulse wave, similar to that seen on the ligated central end of the artery when an amputation is performed. There was some slight bulging of the artery at the region of its branching, and below this there was no pulsation and the caliber of the artery seemed diminished. A Crile clamp was placed on the common femoral artery at the top of the wound to occlude the pulsating portion. The artery was then opened by an incision one half inch in length, revealing a dark red blood clot filling the lumen. This was extruded by gently milking it upward from the femoral and then from the profunda. A steady ooze from the distal ends due to the collateral circulation indicated that the thrombus had been removed. The clot broke in fragments during the removal and small pieces were extracted with fine forceps and a curette dipped in oil. Crile clamps were then placed to occlude the peripheral ends of the femoral and the profunda branch, thus stopping the hemorrhage from the collateral circulation. The central end of the artery was then grasped with the fingers and the Crile clamp loosened. While the opening in the artery was spread with hooks the pressure with the fingers was released, allowing a brisk, spurting flow of blood. This flushed out a few small fragments of blood clots, probably thrombi which had formed central to the embolus. When I was satisfied that the central end was free and that all the blood clot in the vessel at this level was removed, the artery wall was sutured with fine vaselined silk, bringing intima to intima with a running over-and-over stitch. Further stitches were placed in the outer coats of the artery and the peripheral clamps removed. Release of the central clamp was followed by a slight oozing at the upper end of the incision in the artery, so further stitches were taken at that point until there was no further leakage. At the conclusion of the suture there was definite expansile pulsation in the femoral as far down as could be reached in the wound. There was also pulsation in the profunda throughout its exposure. An observer reported pulsation of the popliteal artery at the time of closure of the wound, and there was warming of the leg down to a point below the knee apparent in about twenty minutes.



Schematic drawing of operative field.

The procedure was then repeated on the right



Emboli removed from femoral arteries.

leg, the operation being done with more facility. The clot was approximately the same size and was removed through a longitudinal incision in the artery. Similar results were noted in regard to pulsation in the field of operation. At the conclusion of the operation the left leg seemed to show an increase in the bluish lividity, and was somewhat warmer just above the knee than pre-operatively. Some of the warmth which had immediately followed the embolectomy seemed to have disappeared, leaving the left leg colder than the right.

FURTHER DISCUSSION

DR. CHURCHILL: The pre-operative diagnosis was as Dr. Cabot has made it, and at the time of operation we thought we were operating on the left leg sixteen hours after the onset of symptoms and on the right leg thirteen hours. There was a difference in the time of onset not mentioned in the history. The patient entered the hospital in the afternoon of the 4th and operation was started that evening.

DR. CABOT: About how long were the clamps on?

DR. CHURCHILL: It was varying. The clamps on one side, I should say, were on a total period of half an hour.

DR. YOUNG: But not continuously.

DR. CHURCHILL: No. The next morning at 8:30 the patient was definitely worse as regards general circulation. There was no radial pulse, and her hands and arms were almost as cold as the legs. The left leg was in its pre-operative condition with the line of demarcation at midthigh. The right leg showed warmth and good circulation to the ankle; beyond that it was cold and livid.

The patient wished to go home that day and we were obliged to allow her to go, following her condition through the local physician, who said that she died the next day, with no further change. That is, the operation on the left leg was entirely unsuccessful, presumably because of thrombosis at the site of operation; in the right leg the line of demarcation was definitely shifted from the midthigh to the ankle. I do not know whether this partial failure in the right leg was due to a second embolus peripheral to the one removed, or whether the patient's weakened circulation was insufficient to restore the vitality in the foot.

DR. CABOT: What is the history of this operation? Is this the first time it has been done here?

DR. CHURCHILL: I think it is the first time it has been done in this hospital. It is of interest to see what results may be expected in order to justify such an operation. Dr. Key of Sweden has collected these cases from the literature (Surg. Gyn. and Obs. xxxvi, 309, 1923). The first operation, in 1895, was unsuccessful. The first successful one was by Labey in 1911. Key has had ten cases in nine patients. He ran against bilateral emboli in one case as we did here. No case operated upon after twenty-four hours was successful. He summarizes the cases in which operation was done before twenty-four hours as follows:

	Good	Gangrene	Death soon after operation
1 to 5 hours	7	3	0
6 to 10 hours	4	0	4
11 to 15 hours	2	4	2
16 to 20 hours	1	3	0
21 to 24 hours	2	2	2
	16	12	8

Our case was sixteen hours in the left leg and thirteen hours in the right, approaching the unfavorable group of cases. But after performing the operation I feel that it is a very logical procedure, and with proper technique should be attempted in cases of emboli causing circulatory disturbances of threatening character in the upper or lower extremities.

DR. CABOT: Speed would be an element, because I suppose the shorter time the clamp is on the less danger of damage.

DR. CHURCHILL: Yes. And while the clamp may not injure the artery, the trauma of the operative procedure may. The general technique is of great importance.

A PHYSICIAN: How much significance would you give to the patient's general condition in deciding whether such an operation is advisable?

DR. CHURCHILL: I think a good deal; it was perhaps the chief cause of our failure in this case, because such a weak circulation would certainly favor secondary thrombosis. This woman had apparently been in bad condition, however, several times during the last four years, and we felt that here was a lesion which was fatal if untreated.

CLINICAL DIAGNOSIS

Endocarditis. Mitral stenosis.
Femoral emboli.

◆

ACKNOWLEDGMENT OF BOOKS RECEIVED FOR REVIEW

The JOURNAL acknowledges with thanks the receipt of the following books for review:

Aids to Psychiatry. By W. S. Dawson. New York: William Wood & Co. 309 pages. Price $1.50.

Fundamental Principles in Treatment. By Harry Campbell. New York: William Wood & Co. 477 pages. Price $4.

The Arab at Home. By Paul W. Harrison. New York: Thomas Y. Crowell. 350 pages. Price $3.50 net.

Practical Surgery Illustrated. By Victor Pauchet. Volumes I and II. London: Ernest Benn Ltd. Price 18s. 6d. net each.

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PERIODIC HEALTH EXAMINATIONS

The November sixth issue of this Journal contains two articles on Health Examinations. A Layman's View of Health Examinations, by James A. Tobey of New York, is an enthusiastic estimate of the value of such examinations by one who believes himself to have benefitted therefrom. There appears also the report of the Committee on Health Examinations of the Massachusetts Medical Society, of which Dr. Roger I. Lee is Chairman. The Committee comes out definitely in favor of such examinations, and expresses its belief that these can be made best by the patient's own physician. He will view the patient as a unit, not as a collection of special parts.

The Boston Transcript of October 25th contained the announcement of the establishment in Boston of a branch of the Life Extension Institute of New York. This organization was started in 1914 by Harold A. Ley, with Dr. Eugene L. Fisk as Chief Medical Director. The Boston Branch will be under the management of Henry Copley Greene, a layman who has long been interested in affairs which concern the public health. The institute is not a charitable organization, for examinations are paid for either by the individual or by the insurance companies in which he is insured. Neither is it a money-making scheme; it is financed by an issue of common stock, two-thirds of which is held in trust for the benefit of philanthropic public health work, and by an issue of preferred stock which has not yet paid its full 5% dividend.

The results of the first 10 years' work of this organization have been very encouraging. Apparently the death rate in the groups of policy holders examined has been sufficiently below the anticipated rate to more than repay the insurance companies for having paid for their examinations.

The development of this form of preventive medicine is another instance in which a demand for progress has been made upon the medical profession by laymen. The advertising which will be done in this vicinity will arouse in the public a desire for this form of medical service, and it will be incumbent upon the profession to coöperate. The Committee of the Massachusetts Medical Society has prepared a standard chart for recording the results of such examinations, and these charts may be obtained from the Journal at a small cost. Careful reading of the Committee's report will acquaint physicians with the necessary details of such examinations, so that, if called upon to render such service, they may be prepared.

ENCEPHALITIS LETHARGICA

This comparatively new disease, as we now know it, was apparently referred to in the medical literature of the past four or five centuries in records of cases and epidemics which seem to correspond to encephalitis lethargica but until recently without full understanding of its nature.

Scientific recognition seems to have been shown by Economo and von Wiesner who made a clinical and pathological study of thirteen cases which occurred in Vienna seven years ago.

Since that time the literature on the subject has assumed enormous proportions. As Dominic Sampson might have said the writing on the subject of this remarkable disease has been "prodeegous." This fact, however, stamps the malady as out of the common, showing itself in various parts of the world as a slowly moving epidemic or of epidemic characteristics and leaving serious after-effects. The Ministry of Health of England and Wales published a short time ago a circular in which the salient features of the so-called "sleepy sickness" were pointed out. Among these are that the winter and spring months show the highest prevalence. Its chief activity is upon the central nervous system and experiments suggest some close affinity between the virus of herpes and that of encephalitis lethargica. The disease attacks all ages, with a preference for the early and middle periods of life, and both sexes nearly equally. From the clinical point of view three types are distinguished: 1. General disturbance of the functions of the central nervous system but without localization; 2. Various localizations in the central nervous system; 3. Mild or so called abortive cases. It is stated that the clinical type in England in 1924 seems to be less severe than in 1921. Considered generally, and taking experience of other countries into account, the case mortality of encephalitis lethargica since 1917, according to the Ministry of Health's circular, may be given as between 20 and 50 per cent. The séquelae are both of neurological and medico-legal importance and, perhaps, one of its main distinctive features is the numerous, peculiar and frequently long delayed after-effects. Its differential diagnosis is by no means easy and it is desirable to keep the following diseases in mind when diagnosing encephalitis lethargica: Acute poliomyelitis, polio-encephalitis, Stümpel's type, tuberculous meningitis, cerebrospinal meningitis, cerebral syphilis, typhoid fever, diphtheritic paralysis, renal disease, botulism, functional disorder, hysteria, cerebral irritation, cerebral tumor, cerebral hemorrhage, septic meningitis, cerebral thrombosis and acute dementia. Specific treatment is not available. There seems to be no reliable therapeutic measures which will do any good for the disease itself or for its after-effects. The advice given in the report in this direction is rather of a negative than a positive character. It is seldom advisable to administer hypnotics, morphia or other preparation of opium. Urotropin, if prescribed, should be administered in small doses with caution and the urine should be tested daily for blood and albumin. Generally infectivity is of a low order and encephalitis lethargica appears to belong to that group of maladies, including also cerebro-spinal fever and acute poliomyelitis, in which the pathological agent is much more frequently present in the human organism than the clinical symptoms indicate.

The site of entry seems to be the naso-pharynx and owing to this fact it is well that those in contact with the case should use antiseptic nasal sprays or douches and to gargle the throat with solutions such as are advised for influenza. It should be borne in mind that the non-recognition of mild but infective cases may often account for the apparent sporadicity of the disease and in the investigation of any outbreak of encephalitis lethargica it is very important to search for them among contacts or elsewhere. A curious point is referred to in the report, namely, that it has sometimes appeared that outbreaks of epidemic hiccough "may have been due to the infection of encephalitis lethargica." The name which in England has been given popularly to this disease, "sleepy sickness," is unfortunate because it is likely to be confused with "sleeping sickness," a very different affair.

THE CRANLEIGH

With the idea that a hospital is a hotel for sick people a private hospital has been planned in New York City to be called The Cranleigh.

After the stockholders have been paid reasonable returns the surplus is to be devoted to the advancement of scientific research work for the benefit of the profession and the community.

The cost of the building will be five hundred thousand dollars. The hospital will be entirely under the management of business men with the expectation that difficulties of other hospitals where lay managers and doctors do not work in harmony will be eliminated. A board of doctors will pass on the qualifications of doctors who may desire the services of the hospital, and with the director will supervise the professional policies. The standards of the American College of Surgeons and the American Hospital Association will be adopted.

The medical staff will be composed of representatives of Bellevue, Columbia and Cornell Medical Colleges. Among those who have been selected to serve the institution are Drs. Aspinwall Judd, Francis Huber, Edward Mahoney, John Hammett, James Pedersen, Walter T. Dannreuther, Abraham Moss, John McGrath and Douglas Symmers.

The hospital will have more than 100 beds and rates will be from $4 to $12 per day. Patients of moderate means will be given consideration.

The name of the hospital was suggested by a hospital in Cranleigh, a village of Surrey, England, where the first cottage hospital was established in 1859 by Albert Napper.

The development and practical working of this institution will be watched with interest. Those who are concerned in hospital problems will be surprised if there is any considerable surplus to be devoted to scientific research, under operation of the present plans.

THE AFTERMATH OF THE REVELATIONS RELATING TO THE ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS

California is now dealing with the problems of the graduates of the St. Louis College of Physicians and Surgeons, where it is reported that graduates of this college are under investigation.

Missouri has placed this college in the list of non-reputable schools and will not accept applications for registration from graduates of this institution. Connecticut has cleaned house —but Massachusetts is still obliged, under our law, to accept the St. Louis College graduates for examination.

O tempora! O mores!

MISCELLANY

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

Diseases Reported for the Week Ending November 8, 1924

Disease	*No. of Cases*	*Disease*	*No. of Cases*
Anterior poliomyelitis	7	Pneumonia, lobar	85
Anthrax	2	Scarlet fever	196
Chickenpox	152	Septic sore throat	2
Diphtheria	152	Syphilis	29
Dog-bite requiring anti-rabic treatment	10	Tetanus	2
German measles	7	Suppurative conjunctivitis	19
Gonorrhea	98	Trichinosis	1
Influenza	4	Tuberculosis, pulmonary	116
Measles	79	Tuberculosis, other forms	18
Mumps	47	Typhoid	11
Ophthalmia neonatorum	21	Whooping cough	78

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

Resume of Communicable Diseases October, 1924

GENERAL PREVALENCE

The diseases showing an increase over the previous month were chickenpox, diphtheria, measles, pneumonia lobar, scarlet fever and whooping cough.

	Oct., 1924	Sept., 1924	Oct., 1923
Chickenpox	352	66	561
Diphtheria	583	318	1,060
Measles	250	143	660
Pneumonia, lobar	299	103	197
Scarlet fever	742	367	677
Whooping cough	231	222	335

RARE DISEASES

Anterior poliomyelitis was reported from Amherst, 1; Boston, 14; Brockton, 1; Concord, 2; Dedham, 1; Everett, 1; Fall River, 2; Franklin, 2; Holyoke, 1; Hudson, 1; Lowell, 1; Lynn, 1; Marblehead, 1; Medford, 2; Middleboro, 1; Nahant, 1; New Bedford, 1; Newbury, 1; Northbridge, 1; Orleans, 1; Quincy, 2; Reading, 1; Rockland, 1; Salem, 1; Somerville, 2; Spencer, 2; Springfield, 1; Sturbridge, 1; Wakefield, 1; Westford, 1; Weymouth, 1; Williamstown, 2; Worcester, 4; total, 57.

Anthrax was reported from Boston, 1; Malden, 1; total, 2.

Dog-bite requiring anti-rabic treatment was reported from Boston, 1; Cambridge, 1; Lowell, 1; Methuen, 1; Milton, 1; North Adams, 3; Saugus, 1; total, 15.

Dysentery was reported from Boston, 6.

Encephalitis lethargica was reported from Arlington, 1; Boston, 2; Cambridge, 1; Medford, 1; Somerville, 3; total, 8.

Epidemic cerebrospinal meningitis was reported from Andover, 1; Boston, 3; Brookline, 1; Gardner, 1; Holyoke, 1; Leominster, 1; Lynn, 2; Malden, 1; New Bedford, 1; Westfield, 1; Worcester, 1; total, 14.

Hookworm was reported from Boston, 2.

Malaria was reported from Beverly, 1; Boston, 1; Worcester, 1; total, 3.

Pellagra was reported from Boston, 1; Cambridge, 1; Newburyport, 1; total, 3.

Septic sore throat was reported from Boston, 7; Springfield, 1; Stoneham, 1; total, 9.

Tetanus was reported from Boston, 1; Lynn, 1; Newton, 1; total, 3.

Trachoma was reported from Boston, 1.

Trichinosis was reported from Boston, 1; Chelsea, 1; Fitchburg, 1; total, 3.

DISTRIBUTION

All Communicable Diseases

	Oct., 1924	Oct., 1923
Total cases (all causes)	4,197	5,269
Case rate per 100,000 population	104.8	132.7

Certain Prevalent Diseases

Diphtheria	Oct., 1924	Oct., 1923
Total cases	583	1,060
Case rate per 100,000 population	14.6	26.7

Cities and towns noticeably exceeding their median endemic indexes*:

Marlboro	(2)	12	Melrose	(0)	7
Quincy	(11)	29	Peabody	(5)	12
Chelsea	(6)	14	Pittsfield	(10)	20

Measles	Oct., 1924	Oct., 1923
Total cases	250	660
Case rate per 100,000 population	6.2	16.6

Cities and towns noticeably exceeding their median endemic indexes*:

Cambridge	(4)	14	Chelsea	(1)	39
Newton	(1)	10	Malden	(1)	26

Scarlet Fever	Oct., 1924	Oct., 1923
Total cases	742	677
Case rate per 100,000 population	18.5	17.1

Cities and towns noticeably exceeding their median endemic indexes*:

Attleboro	(2)	7	Medford	(5)	10
Fairhaven	(0)	10	Methuen	(1)	10
Taunton	(3)	10	Watertown	(1)	6
Boston	(103)	175	Clinton	(1)	13
Cambridge	(13)	33	Northbridge	(0)	4
Dedham	(3)	8	Chicopee	(5)	22
Framingham	(2)	10	Easthampton	(2)	11
Norwood	(2)	26	Springfield	(23)	57
Amesbury	(1)	7	Dalton	(0)	10
Beverly	(3)	18	Greenfield	(2)	7
Swampscott	(2)	16	Pittsfield	(4)	11

Typhoid Fever	Oct., 1924	Oct., 1923
Total cases	64	89
Case rate per 100,000 population	1.6	2.2

Whooping Cough	Oct., 1924	Oct., 1923
Total cases	231	335
Case rate per 100,000 population	5.8	8.4

Cities and towns noticeably exceeding their median endemic indexes*:

Attleboro	(0)	3	Chicopee	(0)	8
Middleboro	(1)	20	E. Longmeadow	(0)	5
Canton	(0)	11	Springfield	(10)	16

Tuberculosis, Pulmonary	Oct., 1924	Oct., 1923
Total cases	496	489
Case rate per 100,000 population	12.4	12.3

Tuberculosis, Other Forms	Oct., 1924	Oct., 1923
Total cases	86	75
Case rate per 100,000 population	2.1	1.9

*The Median Endemic Index is obtained by arranging in arithmetical sequence the monthly totals of reported cases for the past five years and selecting the middle figure. The numbers in parentheses after the name of each city and town indicate the Median Endemic Index for that city or town; the numbers without parentheses indicate the cases reported during the current month.

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

Diseases Reported for the Week Ending November 1, 1924

Disease	*No. of Cases*	*Disease*	*No. of Cases*
Anterior poliomyelitis	14	Ophthalmia neonatorum	22
Anthrax	1	Pellagra	1
Chickenpox	105	Pneumonia, lobar	87
Diphtheria	148	Scarlet fever	194
Dog-bite requiring anti-rabic treatment	1	Septic sore throat	3
		Syphilis	60
Dysentery	1	Suppurative conjunctivitis	21
Encephalitis lethargica	3	Trachoma	1
		Trichinosis	2
Epidemic cerebrospinal meningitis	1	Tuberculosis, pulmonary	118
German measles	4		
Gonorrhea	113	Tuberculosis, other forms	13
Influenza	3		
Measles	77	Typhoid	10
Mumps	39	Whooping cough	45

CONNECTICUT DEPARTMENT OF HEALTH

Weekly Morbidity Report for the Week Ending November 1, 1924

(Including all cases reported before 11 A. M., Monday, November 3, 1924)

Diphtheria

Fairfield County	
Bridgeport	12
Stamford (C)	3
Stratford	3
Trumbull	1
Hartford County	
Berlin	1
Bristol	1
Hartford	7
New Britain	6
Plainville	2
Middlesex County	
Chester	1
New Haven County	
Meriden (C)	4
Waterbury	4
New London County	
Norwich (C)	2
Norwich (T)	1
Windham County	
Putnam (C)	2
	—
State total	50
Last week	50

The following diphtheria bacilli carriers were reported:

Bridgeport	1
Hartford	4
Madison	9
New Britain	8
New Haven	7
Plainville	1
Southington	8
Stafford Springs	1
Westbrook	1

Smallpox

New London County	
Stonington	3
	—
State total	3
Last week	0

Scarlet Fever

Fairfield County	
Bridgeport	8
Stamford (C)	2
Hartford County	
Berlin	1
Bristol	1
Enfield	1
Glastonbury	1
Hartford	4
Manchester	3
New Britain	6
Litchfield County	
Barkhamsted	2
Thomaston	7
Watertown	2
New Haven County	
New Haven	6
Seymour	1
Waterbury	2
New London County	
Groton (B)	1
Windham County	
Putnam (C)	5
Thompson	1
	—
State total	54
Last week	83

Measles

Middlesex County	
East Haddam	1
New Haven County	
New Haven	2
New London County	
New London	1
	—
State total	4
Last week	6

Whooping Cough

Fairfield County	
New Canaan	1
Stamford (C)	1
Hartford County	
Hartford	7
Middlesex County	
Saybrook	2
New Haven County	
Cheshire	5
Meriden (C)	1
New Haven	19
Oxford	1
Seymour	2
Waterbury	1
New London County	
Groton (B)	3
New London	5
Windham County	
Canterbury	5
	—
State total	53
Last week	59

Typhoid Fever

New Haven County	
Waterbury	1
	—
State total	1
Last week	6

Other Communicable Diseases

Cerebrospinal men.	1
Chickenpox	49
Conjunctivitis inf.	1
Encephalitis epid.	2
German measles	1
Influenza	1
Mumps	8
Pneumonia (lobar)	26
Poliomyelitis	1
Septic sore throat	1
Tuberculosis (pul.)	21
" (other forms)	3
Gonorrhea	13
Syphilis	33

MAINE STATE DEPARTMENT OF HEALTH

Weekly Report of Infectious Diseases Reported for the Week Ending November 1, 1924

Chickenpox

Auburn	1
East Millinocket	3
Lewiston	2
Norway	4
Otisfield	2
Passadumkeag	1
Portland	12
Vassalboro	1
Yarmouth	6
	—
	32

Diphtheria

Boothbay	1
Lewiston	2
Masardis	1
Mexico	3
Portland	5
Westbrook	1
Winslow	2
	—
	15

Gonorrhea

Houlton	1
Millinocket	1
Sanford	1
	—
	3

Influenza

East Millinocket	11

Measles

Bangor	1

Mumps

Millinocket	3
Portland	11
South Portland	1
	—
	15

Pneumonia

Augusta	1
Bangor	1
Easton	2
Gorham	1
Solon	1
South Portland	2
	—
	8

Poliomyelitis

Abbot	1
Brunswick	1
Ellsworth	1
Lamoine	1
Mt. Vernon	1
Oxford	1
Surry	1
	—
	7

Scarlet Fever

Auburn	2
Augusta	1
Ashland	1
Bangor	2
Eastport	2
Ellsworth	1
Gorham	4
Lewiston	1
Machiasport	1
Milford	2
Old Town	2
Presque Isle	7
Pembroke	2
Vienna	11
Shirley	1
Surry	2
	—
	42

Tetanus

Benton	1

Tuberculosis

Camden	1
Clinton	1
Hebron	1
Houlton	1
Howland	1

Lewiston	1
Livermore Falls	1
Norway	1
Portland	1
Rangeley	1
Searsmont	1
	—
	11

Typhoid Fever

Ashland	1
Bath	1
Belfast	1
Damariscotta	1

Gray	1
Mexico	1
Mt. Vernon	1
Portland	1
Rockland	1
	—
	9

Vincent's Angina

East Millinocket	1
Portland	1

Whooping Cough

Easton	8

THE MEDICAL SCHOOLS OF THE UNIVERSITY OF CHICAGO

UNDER the item of "General Information" the University of Chicago publishes the scheme of medical education in that University as follows:

> The Medical Schools of the University include (1) The Graduate School of Medicine of the Ogden Graduate School of Science, (2) Rush Medical College, and (3) The Rush Post-Graduate School of Medicine.
>
> The Graduate School of Medicine of the Ogden Graduate School of Science was organized in 1924. Its purpose is to serve the Medical Sciences by research and teaching. It is a part of the Ogden Graduate School of Science and its work is done on the University Quadrangles in close contact with that of other departments of this school—Physics, Chemistry, Biology, etc. Departments devoted to the preclinical sciences were provided for when the University was founded, and established shortly thereafter. Their primary purposes were the development of the sciences and the training of scientists. Since 1899 they have included among the courses offered all those required in the first two years of work leading to the degree of Doctor of Medicine as well as those leading to the degrees of Bachelor of Science, Master of Science, and Doctor of Philosophy.
>
> With the definite organization of the Medical School there are being added on the Quadrangles clinics and departments devoted to the clinical medical sciences also incorporated within the Ogden Graduate School of Science and with the same general character and purpose. The work of these departments will lead to the degrees of Doctor of Medicine, Master of Science, and Doctor of Philosophy.
>
> At present candidates for the degree of Doctor of Medicine do the work of the first two years in the Graduate School of Medicine of the Ogden Graduate School of Science of the University on the Quadrangles. They do the work of the third and fourth years in Rush Medical College at 1748 West Harrison Street. The interne year may be taken in any hospital approved by the Committee on Fifth Year of Rush Medical College.

According to statements in the press, the buildings covering two of the blocks west of Ellis Avenue are to be removed and a tract of nine acres will be devoted to the development of medical schools and allied institutions.

About $4,000,000 will be spent in the near future for hospitals, laboratories and teaching quarters. Probably $4,000,000 more will be later used in perfecting the plan. A large endowment is planned for the maintenance of the schools.

THE FUNCTIONS OF THE MASSACHUSETTS DIVISION OF THE BLIND

THIS Division was created under the provisions of Chapter 385, Acts of 1906, as amended, and serves the following purposes:

1. Acts as a bureau of information and industrial aid for the purpose of helping the blind find employment and develop home industries.
2. Maintains schools for the industrial training of blind adults and workshops for their employment.
3. Promotes special classes in the public schools for the conservation of vision of children with defective vision.
4. Maintains a register of the blind and of all having seriously defective vision.
5. Assists blind adults engaged in home industries by the loan of material or tools, and by the sale of the articles produced.
6. Ameliorates the condition of the blind through the circulation of books, by visits and other assistance.
7. Administers financial assistance to needy blind adults, but not the permanent support of any individual.

To carry out these purposes, the division is in close touch with a large proportion of the blind of the State. Field workers visit those who are in financial need, or desire employment, or require other assistance. The home teachers visit those desiring instruction in their homes. Workshops are maintained in Cambridge, Fall River, Lowell, Pittsfield, and Worcester. Classes for the conservation of vision are assisted in ten cities. A register of all the blind in the State is maintained at the central office and brought up to date at least annually. Whenever a newly blinded person is reported, his case is investigated and such assistance given as the circumstances may require. Salesrooms for the disposal of the products of the home workers are maintained in Boston and Pittsfield. Exhibitions and sales are held in other cities and towns in coöperation with local organizations or stores. Over $100,000 was distributed last year as temporary assistance for the needy blind. In addition, the workers arrange for vacation trips, theatre tickets, medical attention, automobile rides, readers, guides, and numerous friendly services.

THE DICK TEST AND IMMUNITY IN SCARLET FEVER

AMONG the interesting papers heard by the health officers of Connecticut who attended the 53rd Annual Meeting of the American Public Health Association in Detroit were those by Dr. Dick and Dr. Zingher on the methods that are being developed to ascertain those susceptible to scarlet fever and to immunize persons against this disease.

The following is an abstract of the paper delivered by Dr. Abraham Zingher.

"The results with the Dick test on over 12,000 normal persons and 300 cases of scarlet fever indicate that the test is a valuable index of immunity and susceptibility to scarlet fever. A control test with heated toxin to check up on the pseudo reactions has been found to be a necessary part of the Dick test. The percentage of susceptible persons by age and by social groups bears a close resemblance to similar percentages noted with the Schick test for diphtheria susceptibility. Children of the more well-to-do classes as well as nurses in training schools showed a high percentage of positive reactions. The antitoxic immunity is transmitted from mother to offspring and protects the infant for six to twelve months.

"The Dick test helps in the diagnosis of doubtful cases of scarlet fever, a strongly positive reaction early in the disease and also in convalescence indicating that the patient did not have the disease. Scarlet fever is a combined toxic and bacterial infection caused by a specific hemloytic streptococcus, the immunity following an attack of the disease being chiefly antitoxic. Subsequent infections with the specific streptococcus may occur but without the characteristic toxic manifestations of clinical scarlet fever, a rash followed by desquamation. The negative Dick reaction in a large majority of convalescents points to the production of a single type of toxin by most of the streptococcus strains causing scarlet fever. A few persistent positive reactors have also been found among convalescents, but most of these patients did not desquamate.

"Active immunization with gradually increasing doses of scarlet fever toxin is a safe procedure and not likely to be followed by constitutional reactions. The successful result of such immunization is difficult to interpret because of the high proportion of pseudo reactions at the reset. This can be avoided to a certain extent by the use of purified toxin. The scarlet fever toxin is neutralized in multiple proportions by the antitoxin serum. During the past summer over 2000 children under 6 years of age were injected at the Baby Health Stations against diphtheria and scarlet fever, the preliminary Schick and Dick tests being omitted."—*Bulletin Connecticut Department of Health.*

ALCOHOLISM—A MNEMONIC

BY GEORGE L. WALTON, M. D.

We are all familiar, whether from observation or experience (long ago, of course) with the effects of excessive indulgence in beverages of strong alcoholic content. But how many of us, if suddenly called upon to describe them, could adequately do so, excepting in popular language—not to say slang?

Perhaps this doggerel will help:

First comes the stage of excitement,
With loss of psychic control,
When the speech is disconnected,
And the conversation droll

Unless it is disagreeable,
With epithets of offense,
With disregard of convention
And loss of moral sense.

With voluble speech and flight,
Apperception is almost minimal,
And the conduct resulting may even
Be silly, offensive, and criminal.

Now comes the stage paralytic
When excitement begins to abate,
Affecting the automatic,
Like the speech, the movements, the gait.

With indistinct speech, awkward movements,
And staggering gait—or unsteady,
The victim for comatose slumber
And deepest oblivion's ready.

With confused recollection of murder,
Or rape, he wakes lucid but weary,
With exhaustion of body and mind,
Brain tired, limbs listless, eyes bleary.

The maniacal drunk shows excitement,
The comatose drunkard does not.
The convulsive suggests epilepsy,
The deluded's the worst of the lot.

The continuous alcoholic,
Though he may not be insane,
Is restless and unreliable,
And lost to all sense of shame.

Duty and obligation
Are only things to shirk
Through loss of mental activity
And capacity for work.

A martyr to persecution,
Affection turned to dislike,
This anterograde amnesic
Goes wandering down the pike

In danger of delirium tremens
Although he is sure you are wrong,
With confusion and paranoia
And dementia coming along.

And the worst of his delusions
Is shown by the refrain
"No matter what the temptation is,
I never shall do it again."

HAMPSHIRE DISTRICT MEDICAL SOCIETY

A regular meeting of the Society was held at Boyden's Restaurant on November 12, at 4.30 P. M., Dr. George W. Rawson in the chair. In the absence of Dr. Paul A. Hudnut, secretary, Dr. E. E. Thomas acted pro tempore, and read a letter from the Joint Committee on State and National Legislation of the State Society endorsing our attitude on the chiropractic bill; also a communication from the State Nurses' Association in appreciation of our coöperation during their recent annual meeting held in Northampton.

A verbal communication from the management of Boyden's to the effect that we must guarantee at least fifteen diners in order to use the banquet hall for meeting purposes brought forth a motion to meet in the future at the Forbes Library at 11.30 A. M. as formerly, and leave arrangements for dining to the individual members.

Dr. Channing C. Simmons, of the Huntington Memorial Hospital, Boston, read an excellent paper on "The Treatment of Cancer, with Special Reference to Radiation," illustrated by lantern slides.

◆

NEWS ITEMS

Loss of Hospitals by Fire.—In the United States virtually one hospital burns every day in the year, according to the records of the actuarial bureau of the National Board of Fire Underwriters.

Springfield Academy of Medicine.—The regular meeting of the Academy was held Tuesday evening, November 11th. Dr. William F. Braasch, Chief of the Urological Department of the Mayo Clinic, Rochester, Minn., read the paper of the evening entitled "Possible Clinical Errors from Laboratory Data," with lantern slide presentation. Discussion was opened by Drs. John Dwyer and George Schadt.

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

At a meeting of this society held November 5, 1924, the following program was presented: Dr. Field, 2 cases Sigmoid Obstruction; Dr. Tucker, Post Operative Intestinal Adhesions; Dr. Hardy Phippen, Diverticulum of Bladder; Dr. Curtis, Myositis Ossificans following removal of head of radius; Dr. McDermott, Poliomyelitis; Dr. Sargent, Recovery from Diabetic Coma. A study in Cardio Therapy with a case; Dr. Walter G. Phippen, 2 cases of non malignant intestinal obstruction.

After the dinner addresses were delivered by James W. Sullivan, Esq., of Lynn, on Medical Testimony and Dr. Robert L. DeNormandie on Maternal Welfare.

The Lynn Medical Fraternity held its regular meeting at Huntt's Grill on Wednesday evening, Oct. 29, 1924. Dr. W. R. McAusland of Boston spoke upon the fundamental principles governing the determination of posture in the fixation of fractures involving the long bones with joint complications. Dr. William E. Preble of Boston discussed Chronic Infectious Arthritis. Adjourned 10 P. M.

REMOVALS

Dr. Charles E. Blackway of Fall River has moved from Franklin St. to 137 Winter St.

Dr. Herbert M. Larrabee of Tewksbury now has an office in Lowell at 9 Central St.

Dr. Antonio D. LeLisle has moved from the Burbank Hospital to 104 Daniels St., Fitchburg.

Dr. Max Baker has moved from Boston to 32 Shirley Ave., Revere.

Dr. S. C. Zundell of Roxbury, (Norfolk) has moved to Glendale, Calif., (non-resident list) where his address is: 206 South Bend Boulevard.

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NOTICES

A Physiological Conference will be held Wednesday, November 26, at the Bowditch Library Building C of the Harvard Medical School, at 4 P. M. Subject: "Some Problems of Muscular Contraction, by Dr. Wallace Fenn.

THE HARVARD MEDICAL SOCIETY

The next regular meeting of the Harvard Medical Society will be held as usual in the amphitheatre of the Peter Bent Brigham Hospital, November 25, at 8:15 P. M. The program follows:—

1. Demonstration of cases.
2. The Epidemiology of Infantile Paralysis. Dr. W. L. Aycock, Department of Preventive Medicine, Harvard Medical School.

Discussion.

All members of the medical profession, medical students and nurses are invited.

MASSACHUSETTS SOCIETY OF EXAMINING PHYSICIANS

Dinner and meeting at Copley Plaza Hotel, Tuesday, December 2, 1924, 7 p. m., $2.50 a plate.

Speaker: Dr. F. H. Albee of New York City: "Reconstructive Bone and Joint Surgery," illustrated by moving pictures and lantern slides.

Discussion opened by Drs. F. D. Donoghue, Frederic J. Cotton, George Morse and Arial W. George.

William Pearce Coues, m. d., *Secretary.*

BOSTON ASSOCIATION FOR THE PREVENTION AND RELIEF OF HEART DISEASE

Meeting at the amphitheatre of the Peter Bent Brigham Hospital, Thursday, November 20, 1924, at 8:15 p. m. Subject: "The Heart in Acute Infections," Dr. Edwin H. Place.

Doctors, students and all others interested are invited.

S. A. Levine, *Secretary.*

BOSTON—DESIRABLE POSITIONS OPEN

Medical Inspector, Health Department

November 28, 1924

Requisition Is for a Male But the Examination Is Open to Both Males and Females

There are two vacancies at a salary of $1600 a year. Applicants must be registered physicians under the State Board of Registration in Medicine. The Medical Director keeps in touch with health conditions in his district and under the direction of the Health Department advises and coöperates with physicians and local organizations in matters relating to the promotion of public health; it is his duty to see that measures prescribed by law or regulations for the prevention of the spread of communicable diseases are observed, to supervise the isolation or quarantine of communicable diseases, to examine, when occasion arises, persons suspected of having a reportable disease, to investigate causes of sickness or food poisoning or of death, and to perform various other duties of a professional character.

The subjects of examination with their respective weights will be as follows: Training and experience, 4; practical questions on the duties of the position, 3; personality and fitness as determined by an oral interview, 3; total, 10.

Applicants will be required to obtain at least 65 per cent. in each subject of the examination in order to become eligible.

Successful applicants will be given a physical examination.

GENERAL INFORMATION

The names of veterans who pass the examination will be placed upon the eligible list in the order of their respective standing, above the names of all other applicants, as provided for in Section 23 of Chapter 31 of the General Laws.

Only citizens of the United States who have domiciled in the Commonwealth for one year next preceding the date of filing application have a right to apply. Preference in certification will be given to applicants who, at the time of certification, have been domiciled for six months in the city from which requisition is received.

Application blanks may be obtained by applying in person or by letter at the office of the Department of Civil Service and Registration, Division of Civil Service, Rooms 148-152, State House, Boston, or from any of the following Civil Service representatives: Brockton, William C. Drohan; Chicopee, Carrie M. Stebbins; Fall River, Thomas D. Sullivan; Fitchburg, Samuel W. Miller; Gloucester, Charles H. Morrow, M.D.; Haverhill, Edward B. Savage; Holyoke, Clifford S. Lyon; Lawrence, Arthur P. McCormick; Lowell, James H. Carmichael; Marlborough, William H. Murphy; New Bedford, William J. Carter; North Adams, Fred H. Reagan; Pittsfield, Oscar S. Read; Springfield, George H. Hughes; Taunton, Howard A. Briggs; Worcester, Mrs. Robert C. Hunt. When filled out application papers should be filed at once in the office of the Department of Civil Service and Registration, Division of Civil Service.

In order to be entitled to receive a notice for examination, an applicant should have his application on file at least ten days before the date set for holding the examination. Persons filing applications later than this date may be notified at the discretion of the Commissioner of Civil Service.

Notice of the time and place of examination will be sent to those having applications on file within the required time.

Payson Dana,
Commissioner of Civil Service.
George M. Harlow,
Patrick J. McMahon,
Associate Commissioners.

SOCIETY MEETINGS

Bristol South Medical Society

Next meeting will be held Thursday, November 6, 1924.

Essex North District Medical Society

January 7, 1925. Semi-annual meeting at Haverhill.
May 6, 1925. Annual meeting at Lawrence.

Essex South District Medical Society

Essex South District Medical Society's next meeting will be held Wednesday, December 3, at the Beverly Hospital. 5 P. M., clinic by members of the Staff. 7 P. M., supper. Speaker, Dr. John Homans, Boston, on "The Early Diagnosis of Carcinoma of the Large Intestine."

Hampden District Medical Society

Meetings to be held on the third Tuesday of January and the third Tuesday in April.

Hampshire District Medical Society

The meetings will be held the second Wednesday of November, January, March and May.

Dr. Channing Simmons will deliver an address at the November meeting. Title: "The Treatment of Cancer, with Especial Reference to Radiation."

Middlesex East District Medical Society

Wednesday, January 21. Harvard Club. Dr. Franklin K White, "Diagnosis of Gall-Bladder Disease."

Wednesday, March 18. Harvard Club. Dr. John H. Cunningham, "Urinary Retention: Its Significance and Treatment."

Wednesday, April 15. Harvard Club.

Wednesday, May 13. Colonial Inn, North Reading.

Middlesex North District Medical Society

January 28, 1925.
April 29, 1925.

Middlesex South District Medical Society

Winter Schedule—The plans for winter meetings of the Society include the stated meetings in October and April, two hospital meetings, and five meetings to be held in conjunction with the Suffolk District Medical Society and the Boston Medical Library (two surgical, two medical, and one general).

Norfolk District Medical Society

November 25, 1924. Masonic Temple, Roxbury. Subject: Diabetes—with especial reference to insulin. Speakers: Dr. Joslin and probably one other.

January 27, 1925. Masonic Temple. Subject: "Some Trends of Medical Teaching and Medical Practice." Speakers: Drs A. S. Begg and W. P. Bowers.

February 24, 1925. Masonic Temple. Subject: "The Need of Periodical Physical Examinations and How to Make Them." Speaker: Dr. Francis H. McCrudden. A second speaker will be selected to present another subject at this meeting.

March 31, 1925. Tufts College Medical School. This meeting given over to Drs. Leary and Watters for the purpose of giving us a medical examiners' talk.

Norfolk South District Medical Society

Meetings will be held the first Thursday of each month from October to May, inclusive, at 12 noon, at the Norfolk County Hospital, South Braintree.

Suffolk District Medical Society

December 17. Medical Section, in association with the Middlesex South District Medical Society. "The Newer Drug Treatment of Heart Disease." Dr. Paul D. White.

January 28. General meeting, in association with the Boston Medical Library and the Middlesex South District Medical Society. "Some Experiences of a Medico-legal Pathologist" (lantern slides), Dr. George B. Magrath

February 25. Surgical Section, in association with the Middlesex South District Medical Society. "Pyelonephritis," Dr. Arthur H. Crosbie.

March 25. Medical Section, in association with the Middlesex South District Medical Society. "The Treatment of Pneumonia," Dr. Edwin A. Locke.

April 29. Annual meeting. "Hypertension and Longevity." Dr. Harold M. Frost.

Worcester District Medical Society

December 10, 1924. Worcester State Hospital. Subject and speaker to be announced.

January 7, 1925. Surgical meeting. Place, subject and speaker to be announced.

February 11, 1925. Memorial Hospital, Worcester. Papers will be read by the members of the hospital staff.

March 11, 1925. St. Vincent's Hospital, Worcester. Papers will be read by the members of the hospital staff.

April 9, 1925. Subject and speaker to be announced

May 14, 1925. Annual meeting.